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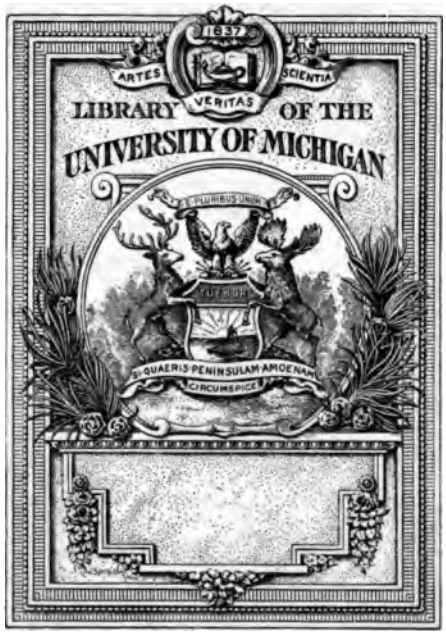

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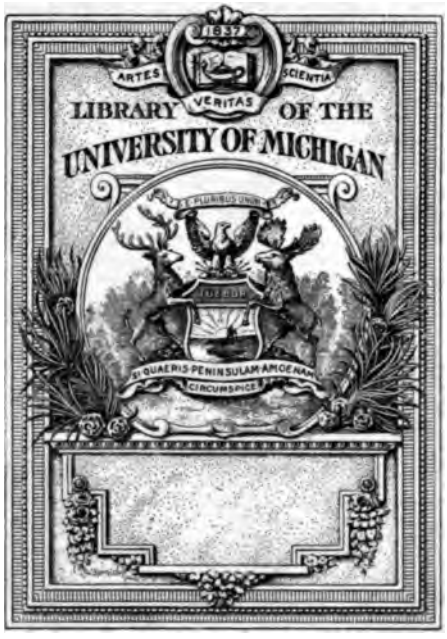

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War Department, U. S. A.

Annual Reports, 1907

(IN TEN VOLUMES)

Volume II

Reports of

QUARTERMASTER-GENERAL
COMMISSARY-GENERAL
SURGEON-GENERAL
PAYMASTER-GENERAL
CHIEF SIGNAL OFFICER
CHIEF OF ARTILLERY
BOARD OF ORDNANCE AND FORTIFICATION

WASHINGTON
GOVERNMENT PRINTING OFFICE
1907

ARRANGEMENT OF THE ANNUAL REPORTS OF THE WAR DEPARTMENT FOR THE YEAR ENDED JUNE 30, 1907.

Volume I.....Secretary of War.
Chief of Staff.
The Adjutant-General.
Inspector-General.
Judge-Advocate-General.

Volume II.....**Armament, Transportation, and Supply:**
Quartermaster-General.
Commissary-General.
Surgeon-General.
Paymaster-General.
Chief of Engineers, Military Affairs.[a]
Chief of Ordnance.[b]
Chief Signal Officer.
Chief of Artillery.
Board of Ordnance and Fortification.

Volume III.....**Division and Department Commanders:**
Atlantic Division—
1. Department of the East.
2. Department of the Gulf.

Northern Division—
1. Department of the Lakes.
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Volume IV.....**Militia, Military Schools, and Military Parks:**
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Military Academy—
1. Board of Visitors.
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Military Parks—
1. Chickamauga and Chattanooga.
2. Gettysburg.
3. Shiloh.
4. Vicksburg.

Volume V.....Chief of Engineers.

Volume VI.....Chief of Ordnance.

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[a] Printed in Report of Chief of Engineers, Vol. V.
[b] Printed in Report of Chief of Ordnance, Vol. VI.

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REPORT OF THE QUARTERMASTER-GENERAL.

REPORT OF THE QUARTERMASTER-GENERAL.

WAR DEPARTMENT,
OFFICE OF THE QUARTERMASTER-GENERAL,
Washington, July 1, 1907.

SIR: I have the honor to submit the annual report of the operations of the Quartermaster's Department for the fiscal year ended June 30, 1907, which period was entirely under the administration of my predecessor, Maj. Gen. C. F. Humphrey, who had planned and outlined in memoranda the scope of the report, and his ideas have been followed as closely as possible. It was desired and deemed proper that General Humphrey sign this report, but his absence from the city and the impossibility of delaying its submission prohibited.

DUTIES OF THE DEPARTMENT.

There is seldom anything spectacular in the work of the Quartermaster's Department, and the labor of its administration, the multiplicity, complexity, and ramification of its functions and vital importance of its duties are little understood by those not in actual close contact with it or concerned in its operations. Briefly, the duties which by law and regulations devolve upon the department begin with supplying the recruit with his first army clothing and extend to providing and caring for the soldier's last resting place. Between these two extremes there is included all that is necessary to properly clothe, equip, shelter, and transport, by land and water, the entire army and its supplies of every class and kind—all its constituent parts.

By law (23 Stat. L., 110) the department may be called upon to receive, transport, and be responsible for property turned over for shipment by other departments of the Government, and this provision is largely taken advantage of, payments coming from their own appropriations. In a business way it is in constant contact with manufacturers of cloth, clothing, shoes, wagons, machinery, heating and lighting apparatus, railroad and water transportation companies, shipbuilders, dealers in horses and mules, and forage, contractors for building, and manufacturers and dealers in all supplies relating to building, water and plumbing systems, grading, etc., the enumeration of which would require pages. The operations of the department extend all over the vast territory of the United States, to Hawaii, Alaska, Japan, the Philippine Islands, Cuba, and Porto Rico. To perform its manifold duties and handle its varied and constantly

increasing business over this diversified area, extending over halfway around the world, reaching from the arctic to the tropic regions, and involving all kinds of climate, widely differing business practices and economic conditions, the strength of the corps consisted of but 96 commissioned officers and 200 post quartermaster-sergeants, in addition to which 76 officers of the line were detailed as acting quartermasters in connection with the work of the department.

The inadequacy in numbers of the regular corps for the work to be performed is apparent, hence this heavy draft upon the line of the Army is absolutely necessary. There is urgent need for such increase in the number of commissioned officers of the corps as will relieve the department from the necessity of calling upon line officers to perform its duties; also for an increase in the number of post quartermaster-sergeants and the creation of a general-service corps for the work of the department. These matters will be more fully discussed below.

In time of peace the department must be always busy and alert, in time of war or emergency it must act promptly and with the greatest energy, for its paramount duty is to place troops and supplies where needed, and the importance of doing this with celerity, to anticipate emergency, or forestall an enemy, is too well established to need more than reference. Perhaps no better idea can be gained of the magnitude of this department's work than by simply considering that it had at its disposal during the fiscal year appropriations aggregating $33,551,769.17. The chief uses for which these were expended will be touched upon with some detail hereinafter.

FINANCIAL STATEMENT.

By acts of Congress June 12 and 30, 1906, and March 4, 1907, there was appropriated for the regular service of the Quartermaster's Department for the fiscal year ending June 30, 1907, including allotments from special appropriations, the sum of	$31,402,685.06	
During the fiscal year there was deposited to the credit of appropriations from various sources as shown, the sum of	2,149,084.11	
Making a total of		$33,551,769.17
Of this there was remitted to disbursing officers	28,223,749.15	
There was paid on account of settlements made at the Treasury	174,019.07	
		28,397,768.22
Leaving a balance on July 1, 1907, available for payment of outstanding obligations		5,154,000.95
On July 1, 1906, there was on hand from the regular appropriations for the service of the Quartermaster's Department pertaining to the fiscal year 1906 the sum of	5,366,780.03	
From appropriations of other years, including all indefinite appropriations	4,730,428.87	
For special purposes there was appropriated and allotted during the fiscal year ending June 30, 1907, the sum of	4,099,982.91	
During the fiscal year there was deposited to all appropriations (other than those of 1907, as shown above) from various sources the sum of	1,699,308.15	
		15,896,499.96

Of this there was remitted to disbursing officers	$8,985,738.77	
Paid out on account of Treasury settlements	564,571.06	
Carried to the surplus fund	1,258,147.64	
		$10,808,457.47
Leaving a balance on hand July 1, 1907, of		5,088,042.49

RECAPITULATION.

Remitted to disbursing officers and paid out on Treasury settlements from appropriations of the fiscal year ending June 30, 1907	$28,397,768.22	
From appropriations of previous fiscal years and from indefinite or special appropriations	9,550,309.83	
		$37,948,078.05
Balance remaining in the Treasury July 1, 1907, of appropriations for the regular service of the Quartermaster's Department for the fiscal year ending June 30, 1907	5,154,000.95	
And for appropriations of other fiscal years, and for indefinite and special appropriations	5,088,042.49	
Total		10,242,043.44

COST OF CUBAN EXPEDITION.

Expenditures from funds of the fiscal year 1907, additional to those which would have been necessary if the force comprising the army of Cuban pacification were employed in their ordinary places of duty, have been made from appropriations of the Quartermaster's Department, approximately, as follows:

Regular supplies	$288,012.77
Incidental expenses	103,250.86
Barracks and quarters	24,399.01
Army transportation	1,915,383.31
Clothing and equipage	85,799.32
Horses for cavalry, artillery, and engineers	32,500.00
Emergency fund, War Department	105,625.00
Total	2,554,970.27

Reference to the work of the department in connection with the movement will be found in following pages, particularly that part of this report dealing with the army transport service.

APPROPRIATIONS.

In his annual reports for the fiscal years 1905 and 1906 the Quartermaster-General discussed the needs of this Department for increased appropriations, and as the arguments then submitted still hold good it is thought best to reproduce in part the language then used.

Speaking of the appropriations "Transportation of the Army" and "Regular supplies" he said, referring to reductions from the amounts appropriated during and immediately following the Spanish war and Philippines insurrection, that they were then (fiscal year

1906) "inadequate to meet the actual wants of the Army in bettering the service," and—

It appears that as appropriations under these two heads have decreased the actual and proper wants of the Army thereunder have increased. It will thus be seen that from the establishment of the Army at its present approximate strength there has been a marked reduction in appropriations for the purposes of this Department.

As the strength of the Army during this time has not varied appreciably, it can readily be understood that aside from the appropriations for construction of barracks and quarters there would be under ordinary conditions little variation in the cost of furnishing it with supplies, etc., as devolves upon this Department.

Speaking more particularly of the appropriation "Transportation of the Army," he stated (Quartermaster-General's Annual Report, 1906, p. 4) that while expenses had been in some respects reduced, on the other hand—

* * * in connection with construction of all kinds, repairs, and maintenance large amounts are drawn from the appropriation "Transportation of the Army" for plumbing, water, and sewer systems, grading, roads, walks, wharves, dredging, the construction of sea walls, or riprap work, etc.

* * * * * * *

Increased cost of plumbing fixtures, the expenses incident to maneuvers, practice marches, coast-artillery operations, etc., have increased or created new demands. * * * There are also heavy drafts upon this appropriation through authorities reposed in other bureau chiefs and department commanders over which the Quartermaster-General has no control. This appropriation must pay for the transportation of the entire Army, its supplies, employees, animals, etc., and numerous expenses arising out of such transportation, the purchase of draft and pack animals, purchase and repair of vehicles, pay of teamsters, etc., besides the construction work noted.

There has been an increase of demands upon this appropriation for construction and operation of boats for artillery purposes and hire of steamers to take the place of artillery and harbor vessels when the same are being repaired. This work is important and ought not to be hampered for lack of funds.

As to the appropriation "Regular supplies," the following language was used:

* * * So far as that portion of it drawn for use in construction is concerned, the same remarks apply as to transportation of the Army. Moreover, the demands upon this appropriation have been increasing and will likely continue to increase. Installation of electric lighting and of modern heating systems at posts, the cost of their operation and maintenance, fuel and engine supplies for electric lights and power at seacoast artillery posts, forage required by the addition of machine-gun platoons to each cavalry and infantry regiment, authorized increased number of animals for mounts for field service, etc., and other expenses incident thereto combine to draw upon this appropriation until a deficiency is absolutely unavoidable. Moreover, reserve stocks of staple supplies purchasable from this appropriation, which were accumulated during the Spanish-American war, since drawn upon until now practically exhausted, with the losses sustained in the San Francisco disaster, for which no reimbursement was authorized by Congress, have, taken all together, made conditions more difficult.

From the appropriation "Regular supplies" large amounts are drawn for the construction of lighting and heating systems in new buildings, and installation, repair, or betterment of the same in buildings already erected.

The anticipation that the demands upon this appropriation would increase has proved well founded. The cost of heat and light, which Congress by the act of March 2, 1907, authorized to be furnished officers for their authorized allowance of quarters at the expense of the United States, has been added; the strength of the artillery arm of the service was increased materially, and the establishment and operation of laundries was authorized. The demands referred to in

the above quotation have continued and to an extent increased and expanded, while miscellaneous new necessities and wants have developed.

Moreover, there needs to be considered increasing cost of labor and supplies affecting not only the two appropriations above referred to, but all appropriations. This increase of cost in almost all directions is of such general knowledge it is not believed necessary to here cite any specific cases. The Department encounters it at almost every turn in its calculations. It is expected, in submitting estimates for appropriations for the fiscal year 1909, to furnish in some detail data showing the needs of the Department and the reasons therefor. Every competent administrative officer will naturally work and plan toward operating his department with the highest possible efficiency and least practicable outlay. It is, however, well known that a policy which looks only to the immediate saving of money may in the end prove most uneconomical. There is no desire on the part of this Department to be lavish, but it is desired to avoid being cramped for money for actual needs and to produce results as well as be in a reasonable state of preparedness for emergencies. This is believed to be the real economical position, even though the cash outlay may be slightly in excess of the minimum cost of the absolute necessities.

It has been necessary to submit deficiency estimates, sometimes for large sums, more frequently than the Department desired. Some of these arose through causes no human foresight could anticipate and others may be expected in the future, although from what causes or through what complications can not now be foreseen. On the other hand, it is the policy to submit estimates for only such sums as are required for the needs of the Army and reasonable working margins, and it is requested that they be considered from that standpoint.

Q. M. Gen. Thomas S. Jesup, in his annual report for the fiscal year ending June 30, 1858, after an experience of forty years in the administration of the Department, said:

> It is bad economy to cut down estimates. If the appropriations be more than required for the service, the portions not wanted will remain in the Treasury; but if they be less, and supplies be necessarily purchased on credit, higher prices will always be charged in proportion to the uncertainty of the time of payment. I am sure that if we had had the money for the Utah service on the 1st of January, which we did not receive until May, from $200,000 to $300,000, perhaps more, would have been saved in the three items of horses, mules, and grain.

Additional experiences of nearly fifty years and several lessons many times more costly than the one cited by General Jesup show the wisdom of his remarks and prove his reasoning sound.

CONSTRUCTION AND REPAIR.

The construction and repair of buildings, roads, walks, sea walls, etc., the improvement of grounds, grading, sodding, seeding, and dredging, etc., with items growing out of or pertaining to such work will be treated of under this heading.

APPROPRIATIONS AND ALLOTMENTS.

The following table shows the total amount appropriated and available for the fiscal year 1907 from appropriations pertaining to

construction, repairs, rent, etc., including purchase of land, the total amount allotted from each appropriation, and the unallotted balances at the close of the fiscal year:

Appropriation.	Available July 1, 1906.	Total allotted.	Unallotted balance.
Barracks and quarters	$3,150,000.00	$3,117,547.69	$32,452.31
Barracks and quarters, land at Fort Sam Houston	300,000.00	300,000.00	.....
Military posts	1,238,725.70	1,088,163.47	*150,562.23
Military post exchanges	350,000.00	348,557.03	1,442.97
Construction and repair of hospitals	500,000.00	494,993.23	5,006.77
Hospital repairs, San Francisco	45,000.00	44,992.10	7.90
Quarters for hospital stewards	25,000.00	24,051.30	948.70
Shooting galleries and ranges	100,000.00	99,905.86	*94.14
Barracks and quarters, Philippine Islands	250,000.00	205,301.43	44,698.57
Military post:			
Manila, P. I	9,987.45	45.60	*9,941.85
Fort Niagara, N. Y	150,000.00	149,021.38	*978.62
Fort Snelling, Minn	68,308.80	42,762.00	*25,546.80
Target range, Monterey, Cal	10,000.00	10,000.00	.....
Army general hospital, District of Columbia	199,787.75	198,292.38	*1,495.37
Fort McIntosh, Tex., land	3,000.00	.....	*3,000.00
Fort Wright, Wash., land	8,000.00	.....	*8,000.00
Fort Monroe, Va., land	27,650.00	27,250.00	*400.00
Fort Oglethorpe, Ga., land	20,000.00	16,450.00	*3,550.00
Fort Moultrie, purchase of wharf property, etc	26,000.00	.....	*26,000.00
Fort Douglas, Utah, land	5,000.00	5,000.00	.....
Madison Barracks, N. Y., land for cemetery	699.00	500.00	*199.00
San Juan, P. R., land for cemetery	300.00	300.00	.....
Army supply depot, Fort Mason, Cal	750,000.00	16,200.00	*733,800.00
Total	7,257,458.70	6,189,333.47	1,048,125.23

NOTE.—The balances marked with a star (*) are available for expenditure in the fiscal year 1908 The other balances can only be expended if required for extra work under contracts made in the fiscal year 1907.

ALLOTMENTS FROM GENERAL APPROPRIATIONS.

In addition to the amounts indicated above, funds have been allotted during the past fiscal year from the general appropriations of the Quartermaster's Department for work on buildings, rents, supplies, etc., as follows:

Army transportation:	
For plumbing in new buildings	$215,736.98
For minor repairs to plumbing and sewerage, and water and sewer connections, in connection with repairs to buildings, and for supply of water in rented buildings	205,681.89
For moving buildings, repairs to elevators, and miscellaneous work	7,651.00
Total	429,069.87
Regular supplies:	
For heating apparatus in new buildings	105,630.00
For electric wiring, gas piping, etc., in new buildings	28,099.92
For minor repairs to heating and lighting apparatus, authorized in connection with repairs to buildings	3,013.38
For construction, repair, and equipment of bakeries	14,240.14
Total	211,391.34
Incidental expenses:	
For repair to box lockers	2,632.30
For purchase of refrigerators	12,108.51
For purchase, erection, and repair of permanent flagstaffs	5,014.42
For drafting and surveying instruments and supplies	5,586.11
For miscellaneous purposes	5,078.33
Total	30,419.67

APPROPRIATIONS FOR BARRACKS AND QUARTERS.

The amount appropriated under this head was expended or allotted as follows:

For construction of buildings		$1,913,169.68
Rents in the Philippine Islands		80,000.00
Temporary buildings, flooring tents, etc., in connection with maneuvers		23,337.25
Repairs to buildings, under annual allotment	$193,486.86	
Additional repairs to buildings	308,243.40	
Emergency repairs on account of damage by fire, storm, etc	84,221.42	
Extra-duty pay of enlisted men	55,669.21	
Total for repairs		641,620.89
Window and door screens and shades, storm doors and windows, wall lockers and furniture		110,457.82
Cuban intervention		24,883.68
Rents in the United States		309,026.29
Printing, advertising, and miscellaneous		15,062.08
Total expended or allotted		3,117,556.69
Balance		32,542.31
Total		3,150,000.00

APPROPRIATIONS FOR MILITARY POSTS.

A summarized statement of allotments made from this appropriation for the fiscal year 1907 is given below. The amounts cover construction only, the plumbing, heating, wiring, and gas piping being charged to other appropriations.

Andrews, Fort, Mass., administration building	$21,544.00
Boise Barracks, Idaho, 1 double cavalry barracks, for 130 men	57,332.75
D. A. Russell, Fort, Wyo.:	
Veterinary hospital	23,087.00
2 double Field Artillery barracks, for 480 men	152,400.00
Ethan Allen, Fort, Vt., veterinary hospital	20,457.00
Hamilton, Fort, N. Y., 1 double Coast Artillery barracks, for 218 men	78,870.00
Leavenworth, Fort, Kans.:	
Changes in boiler room and construction stack, Sheridan Hall	7,064.00
Quartermaster's storehouse	38,874.00
Cavalry drill hall	73,350.00
Meade, Fort, S. Dak., 1 single cavalry barracks, for 85 men	37,910.00
Riley, Fort, Kans.:	
1 cavalry drill hall	75,000.00
1 double barracks, for cook and bakers, 170 men	50,867.00
Sam Houston, Fort, Tex., 8 single cavalry barracks, for 680 men	194,400.00
Totten, Fort, N. Y., 1 double Coast Artillery barracks, for 218 men	71,571.00
Wood, Fort, N. Y., 1 Signal Corps barracks, for 120 men	44,400.00
Robinson, Fort, Nebr.:	
2 double cavalry barracks, for 340 men	114,000.00
1 veterinary hospital	20,547.00
Total for construction of buildings	1,081,673.75
Fort Banks, purchase of land	1,600.00
Fort Hunt, purchase of land	50.00
Minor allotments for extra work, printing, advertising, etc	4,839.72
Total allotted	1,088,163.47
Balance unallotted	150,562.23
Total	1,238,725.70

APPROPRIATIONS FOR MILITARY POST EXCHANGES.

A recapitulation of allotments made from this appropriation during the fiscal year 1907 is given below. The amounts include all lighting, heating, and gymnastic apparatus, plumbing, etc., authorized in connection with the construction of the buildings.

Construction and remodeling buildings.

Adams, Fort, R. I.:	
Converting casemates into post exchange and gymnasium	$22,800.00
Remodeling casemates into library room and repairing roofs of casemates	4,695.00
Hamilton, Fort, N. Y., post exchange and gymnasium	28,774.00
H. G. Wright, Fort, N. Y., post exchange and gymnasium	25,122.00
Honolulu, H. I. (new post near), post exchange and gymnasium	20,949.00
Presidio of San Francisco, general hospital, post exchange, and gymnasium	17,845.00
St. Philip, Fort, La., post exchange	15,576.00
Sheridan, Fort, Ill., converting general mess building into post exchange (not including heating and electric wiring)	31,512.00
Strong, Fort, Mass., post exchange and gymnasium	23,431.00
Washington Barracks, D. C., post exchange and gymnasium	38,069.00
Whipple Barracks, Ariz., post exchange and gymnasium	33,475.00
Wood, Fort, N. Y., post exchange and gymnasium	18,806.00
Total for construction and remodeling	281,054.00
Remitted for work in Philippine Islands	15,000.00
Allotted for repairs, apparatus, etc	52,503.03
Total allotted	348,557.03
Unallotted balance	1,442.97
Total	350,000.00

HOSPITAL APPROPRIATIONS.

Based on estimates approved by the Surgeon-General of the Army, allotments have been made from the appropriation for construction and repair of hospitals, as indicated below.

Construction of buildings.

Columbus Barracks, Ohio, hospital building, with plumbing and electric lighting	$99,442.00
D. A. Russell, Fort, Wyo., hospital building, with plumbing and electric lighting	117,502.00
Jackson Barracks, La., deadhouse	333.38
Jefferson Barracks, Mo.:	
Hospital building, with plumbing and wiring	74,552.00
Photograph gallery	1,193.00
Myer, Fort, Va., electric lighting in isolation hospital	400.00
Oglethorpe, Fort, Ga., morgue building, with plumbing, gas piping, etc	1,322.00
Presidio of San Francisco, general hospital, laundry building, with plumbing and wiring	5,186.00
Revere, Fort, Mass., addition to hospital, with plumbing and wiring	2,998.00
Screven, Fort, Ga., restoration of hospital building, after moving same	2,335.00
Sheridan, Fort, Ill., addition to hospital, with plumbing, gas piping, etc	23,304.00
Wadsworth, Fort, N. Y., cow shed	331.72
W. H. Harrison, Fort, Mont., addition to hospital	9,163.00
Wright, Fort, Wash., addition to hospital, including plumbing and wiring, etc	21,224.00
Total for construction	359,286.10
Total for repairs, printing, advertising, etc	110,707.13
Remitted to the Philippines	25,000.00
Total allotted	494,993.23
Unallotted balance	5,006.77
Total	500,000.00

APPROPRIATIONS FOR HOSPITAL STEWARD'S QUARTERS.

Based on estimates approved by the Surgeon-General of the Army, allotments have been made from this appropriation as follows:

Construction of buildings (including plumbing, electric wiring).

Egbert, Fort, Alaska, 1 set quarters, for Hospital Corps sergeants	$3,007.52
Presidio of Monterey, Cal., 1 double set quarters, for Hospital Corps sergeants	4,650.00
Screven, Fort, Ga., restoration of stewards quarters, after moving	525.00
Vancouver Barracks, Wash., 1 set quarters, for Hospital Corps sergeants	4,243.00
Total for construction	12,425.52
Total for repairs, etc	11,625.78
Total allotted	24,051.30
Balance unallotted	948.70
Total	25,000.00

APPROPRIATIONS FOR SHOOTING GALLERIES AND RANGES.

From this appropriation funds have been allotted by the Secretary of War, as recommended by the Chief of Staff, as follows:

Annual allotment to departments:	
For construction, repairs, rents, etc., Philippine Islands	$17,839.39
Department of the East	6,200.36
Department of the Gulf	7,138.14
Department of the Lakes	2,572.00
Department of the Missouri	9,132.71
Department of Dakota	2,132.88
Department of Texas	2,325.90
Department of the Colorado	2,900.00
Department of California	2,874.04
Department of the Columbia	2,607.34
Total	55,722.76
Addititional allotments for special work:	
Fort Lawton, clearing and grading range	4,000.00
Fort Snelling, grading range	20,033.00
Fort Thomas, Ky., rent of range	5,390.41
Fort Sam Houston, fitting up range at Leon Springs	4,315.00
Fort Logan, Colo., fence, etc	3,093.00
Miscellaneous allotments for repairs, rents, etc	7,351.69
Total allotted	99,905.86
Unallotted balance	94.14
Total	100,000.00

SPECIAL APPROPRIATIONS.

The action taken under the various appropriations for purchase of land is set forth in a later section of this report. Following is a recapitulation of expenditures, authorized from the special appropriations for construction of buildings, which were available in the past fiscal year:

Military post, Fort Niagara, N. Y.—From the $150,000 appropriated by Congress 2 double infantry barracks, 1 double set of captains' quarters, and a 6-set bachelor officers' quarters were contracted for in November, 1906, at a cost of $148,789.58, including

all plumbing, heating and wiring, except plumbing in barracks and captain's quarters, which have been charged to the appropriation for "Army transportation."

Military post, Fort Snelling, Minn.—From the appropriation of $50,000 a cavalry drill hall was contracted for in July, 1906, in the sum of $42,762.

Army General Hospital, Washington, D. C.—This hospital has been designated "The Walter Reed Army General Hospital" and is located on the Brightwood road, in the District of Columbia. From the $200,000 appropriated by Congress for its construction contracts were awarded, in November last, aggregating $191,963, for construction of main building, with plumbing, gas piping, heating, and ventilating system, electric conduit and wiring system.

Replacing military stores destroyed at San Francisco, Cal.—The $45,000 appropriated under this head for repairs to hospital buildings in the vicinity of San Francisco was expended during the past fiscal year for repairs at the Presidio general hospital and at other stations, as set forth in a later section of this report, under the head of "Damages by earthquake and storms."

Depot at Fort Mason, Cal.—By the act of June 12, 1906, $1,500,000 was appropriated for the establishment of a general depot for the supply departments at Fort Mason. The preparation of plans, making surveys, and other preliminary work has been in progress during the fiscal year, and it is expected construction work can be begun in the near future.

Trunk and wall lockers.—In the fiscal year ending June 30, 1906, contracts were made for 13,000 trunk lockers. A 20 per cent increase on one of these contracts brought the total number of lockers up to 15,600, which were all delivered and issued to troops in the fiscal year 1907.

On May 22, 1907, contracts were made for 8,000 metal wall lockers at $11.80 each. These lockers are paid for from the appropriation for "Barracks and quarters." Some of them are to be manufactured as singles, others as doubles, triples, and quadruples, and other units as may be required for installation in barracks, etc.

Iron flagstaffs.—There were on hand at the St. Louis depot on July 1, 1906, three 100-foot iron flagstaffs. During the fiscal year there were purchased from the appropriation "Incidental expenses" five 100-foot iron staffs at $498 each, $2,490, and eight 75-foot iron staffs at $147 each, $1,176, making a total of $3,666. One-hundred-foot flagstaffs were issued to five posts and stations, viz, new post near Honolulu, Hawaii; Fort Mason, Cal.; Fort Benjamin Harrison, Ind.; Fort Wood, N. Y., and Finns Point (N. J.) National Cemetery. Seventy-five-foot iron flagstaffs were issued as follows: Fort McPherson (Ga.) and Lebanon (Ky.) National Cemetery, Forts McDowell, Jackson, Wayne, Riley, and Mackenzie, and Camp John Smith, Jamestown Exposition. There were on hand at the close of the fiscal year three 100-foot iron flagstaffs and one 4-section 60-foot iron flagstaff turned in from Fort Terry, N. Y. All the 75-foot iron flagstaffs have been issued.

Damages by earthquake and storm.—In the annual report for fiscal year 1906 it was stated that buildings at posts in the vicinity of San Francisco had been damaged by earthquake to the extent of $218,870.

Prior to July 1, 1907, temporary repairs had been authorized amounting to $53,494.12. Additional funds have been allotted from the appropriations of the fiscal year 1907 to continue the work of repairing earthquake damages, as indicated below:

From special appropriation of $45,000 for repair hospitals (forming a part of the general appropriation "Replacing military stores destroyed at San Francisco"):	
Presidio general hospital, repairs to hospital buildings	$43,268.00
Minor repairs to hospitals at other posts near San Francisco	1,724.10
Total	44,992.10
From "Barracks and quarters" and other general appropriations:	
Presidio of San Francisco (post)	68,630.00
Fort Miley, Cal	615.00
Total	69,245.00

Storm near San Francisco, Cal.—December 10, 1906, the posts near San Francisco were damaged by severe storms, and the following allotments were made to repair damages:

Fort McDowell	$1,085.00
Presidio of San Francisco	2,350.00
Benicia Barracks	141.50
Presidio of Monterey	300.00
Fort Barry	147.50
Fort Baker	1,630.00
Angel Island	53.19
Fort Miley, Cal	2,441.00
Total	8,148.19

Storms in Florida.—On September 26, 1906, a hurricane occurred on the coast of Florida by which all buildings at Fort McRee were totally destroyed, the estimated loss being $30,000. No allotment has been made for replacing the buildings, as the company of Coast Artillery stationed there was transferred to Fort Barrancas.

At Fort Barrancas the top floor of the dock was washed away and nearly all buildings were more or less damaged. A sidewalk from dock to garrison was also washed away. An allotment of $3,600, "Barracks and quarters," was made for repairing the buildings.

At Fort Pickens the damage to buildings was estimated at $12,000. The dock at this post was also considerably damaged. An allotment of $3,000, barracks and quarters funds, was made for repairing the buildings; also an expenditure of $3,398.98, army transportation funds, for repair to water and sewer systems and wharf.

Storm at Fort Morgan, Ala.—In September, 1906, the commanding officer at Fort Morgan reported that the post had been swept by a terrific storm and that the entire post had been under water. The value of buildings which were totally destroyed was estimated at $25,000, and the damage to other buildings at $21,500. The reports rendered at that time showed that the water and sewer system had been damaged and rendered almost useless, also that much damage had been done to the expensive system of grading, roads and walks, on which $97,000 had been expended in the last four years. The buildings at the adjoining post of Fort Gaines were also damaged to the extent of $6,000.

In June, 1907, contract was awarded for replacing the buildings destroyed, at a total cost of $21,286. The Secretary of War also allotted $25,000 for repair of other buildings at Fort Morgan, and authorization was issued from this office for $11,220 of this amount. Bids have invited for the remaining repairs. Funds were also allotted for water and sewer systems.

Storm at San Antonio, Tex.—Much damage was done at Fort Sam Houston and at department headquarters, San Antonio, by wind and hail storms in the months of May and June, 1907. The sum of $3,400.55 from the appropriations of the fiscal year 1907 and $8,417 from the funds of the fiscal year 1908 have been allotted for repairs.

Damage by storms at other posts.—On March 21, 1907, a temporary frame structure used as a fire-apparatus building at Fort Mackenzie, Wyo., was completely destroyed by a windstorm. The sum of $2,144 was allotted to repair various buildings at this post.

At various other posts buildings were damaged to a slight extent by storms.

The total amount allotted from the appropriation for "Barracks and quarters" for repair of damages caused by earthquake, fire, and storms during the fiscal year 1907 was $84,221.43.

Purchases in the United States for the Philippines.—Material was purchased and shipped to the Philippines for use in connection with construction and repair of buildings, etc., from appropriations as follows:

Barracks and quarters, Philippine Islands	$46,479.12
Incidental expenses, Philippine allotment	4,548.11
Military post exchanges, Philippine allotment	1,797.68
Construction and repair hospitals, Philippine allotment	4,396.61
Shooting galleries and ranges	159.63
Total	57,381.15

At the time of rendering this report no further information can be given relative to expenditures in the Philippines. The sum of $205,301.43 was allotted during the year from the appropriation for "Barracks and quarters, Philippine Islands," for construction and repair work. Eighty thousand dollars was also allotted for rents in the Philippine Islands from the regular "Barracks and quarters" appropriation.

The sum of $15,000 was remitted from the appropriation for "Military post exchanges;" $25,000 from the appropriation for "Construction and repair of hospitals," and $17,839.39 from the appropriation for "Shooting galleries and ranges" for work in the Philippines.

Expenditures in connection with maneuvers.—Seven camps of instruction were established by general order of June 18, 1906, at the following places: Mount Gretna, Pa.; American Lake, Wash.; Fort Riley, Kans.; Fort Benjamin Harrison, Ind.; State maneuver camp near Austin, Tex.; Fort D. A. Russell, Wyo.; and Chickamauga Park, Ga.

The total amount allotted from the appropriation "Barracks and quarters, 1907," in connection with these maneuvers was $23,327.25. This amount was expended mostly for hire of camp sites for organ-

izations en route to and from camps of instruction. Flooring of tents was prohibited by the general order establishing the camps.

Purchase of land.—The following statement shows the land acquired during the last fiscal year and the amount paid from the various appropriations authorized for that purpose:

Fort Banks, Mass., for land known as "The Libby property" for wharf, from appropriation for "Military posts"	$1,600
Fort Douglas, Utah, for part consideration for certain lands, easements and ways, adjoining the reservation conveyed to the United States by Le Grand Young in accordance with act of Congress approved June 29, 1906 (Public—346)	5,000
Fort Hunt, Va., 2 acres for enlargement of reservation from appropriation for "Military posts"	50
Madison Barracks, N. Y., for 4.88 acres for cemetery, from appropriation of $699 in sundry civil act, fiscal year 1907	500
Fort Monroe, Va., for about 36 acres for defense, from the $27,650 in sundry civil act, fiscal year 1907	27,250
Fort Oglethorpe, Ga., for about 1,205 acres for target range, known as the "Catoosa Springs tract," including rent for the fiscal year, from $20,000 in sundry civil act, fiscal year 1907	16,450
Presidio of Monterey, Cal., for approximately 154 acres for addition to the target range, from special appropriation	10.000
Fort Sam Houston, Tex.:	
For about 350 acres for enlargement of the reservation, from special appropriation $300,000 under head of "Barracks and quarters"	188,000
For 17,273 acres for target range, etc., about 17 miles from Fort Sam Houston, known as the "Leon Spring tract"	112,000
San Juan, P. R., for 2 acres for a post cemetery, amount appropriated in sundry civil act, fiscal year 1907	300
Fort Snelling, Minn., for 0.5413 of an acre for addition to the target range, from appropriation for "Shooting galleries and ranges"	40

From appropriation for "Military posts," allotments for the purchase of land have been made by the Secretary of War, as follows: $75,000 for addition to Fort H. G. Wright, N. Y., and $75,000 for site for a new post near Fort Constitution at the mouth of Portsmouth Harbor, but title has not yet been acquired.

Titles have not yet been acquired for land at Fort McIntosh, Tex.; Fort Wright, Wash., or Fort Moultrie, S. C., although funds are available for same.

Appropriations for construction.—Recommendations have heretofore been made for changes in the present arrangement of construction appropriations, to the end that existing complications may be eliminated and incongruities removed. (See Quartermaster-General's Report for 1906, page 11, and for 1905, pages 8 and 9). Other important changes and reforms having been authorized by Congress, the time is believed opportune to take up the laws now governing construction work for the Army and revise them to bring about simplicity in execution and concentrate the appropriations from which come funds for building. The limit of cost, now $20,000 (R. S., 1136), for buildings which can be constructed without special authority of Congress, ought to be increased to $60,000. This is especially urgent with reference to hospitals. Where appropriations are made for the construction of designated buildings, the plumbing system, heating apparatus, and lighting fixtures should be included. It is requested that the reasons heretofore given for these changes be considered. If the limit of cost of construction above referred to be raised, as advocated, to $60,000 for a single building, the appropria-

tion for "Transportation of the Army" should be relieved from the charge for installing plumbing and that for "Regular supplies" from the charge for heating apparatus and lighting fixtures—wiring for electric lights, gas piping, etc.

Cost of construction.—The tendency toward increased cost of construction, mentioned in previous reports, still continues and is one of the reasons for advocating an increase in the limit of cost of buildings above recommended. This increase is especially manifested in case of lumber of all kinds used for structural purposes. Prices of labor have also advanced. Carefully prepared statistics published in periodicals of the building trades conclusively show that the prices of nearly all the lumber used in ordinary construction have advanced fully 100 per cent since 1904, and the higher grades of finishing lumber even more than that. The cost of skilled and common labor in the building trades has also advanced, but not to so large an extent as that of lumber and other structural material.

The Government can no more hope to escape these conditions than can individuals, and under them estimates of cost of construction prepared a year in advance of beginning of the work, and based on contract prices at the time, will not hold good unless allowance is made for a considerable percentage of increase.

Officers' allowance of quarters.—Acting upon the recommendation heretofore made by this office, strongly supported by other departments having knowledge of conditions (particularly the pay department), and approved by the Secretary of War, Congress last winter increased the allowance of quarters to officers. The increase was on the line advocated by this office and practically to the extent it represented as equitable, after thorough investigation. The result has been that officers on duty requiring them to rent dwellings are now more nearly on an equality in this respect with those on service where quarters in kind can be supplied. It is a relief heartily appreciated by the officers affected.

No provision was made in the schedule of allowances of quarters for the grade of General, that of Lieutenant-General being the highest in the Army at the time it was prepared. This, it developed, caused some embarrassment to the Navy Department in determining the allowances due the Admiral. He is of the same grade as General in the Army, and his allowances depend in a measure upon those provided for a like grade in the Army. It would be little trouble to provide in the army appropriation act for an allowance of 11 rooms for a General, and thus simplify matters for the Navy. This is recommended.

Heavy furniture.—Authority was also given by Congress to supply heavy, permanent furniture for officers' quarters, which this office had recommended. A schedule of the articles to be furnished under this authority has been prepared and approved. Supply will be made to all posts of such articles as the purchase of can be made from the funds available and continued under later appropriations until all quarters are fully supplied. This will relieve a need of long standing, simplify transportation on change of station, and, while a distinct advantage to officers, will, it is believed, result in saving of transportation charges.

THE RESERVATION BRANCH

is charged with providing the various military posts and camps with tools, material, and labor in connection with water, sewer, pumping, and electric power systems, lighting, plumbing, heating furnaces and plants, ice machines and plants, sawmills, steam laundries, cremators, waste removal, roads, walks, bridges, fences, railroads, elevators, wharves, sea walls, and numerous other related duties.

Water and sewer systems.—Water systems were installed or improved during the year at 25 posts and wells sunk at 3. At 12 posts sewer systems were installed or improved.

Contract was made June 8, 1907, for the construction of a pump house, installation of boilers, pumps, etc., and construction of a reservoir at the new military post at Honolulu.

Lighting and heating systems.—Electric lighting was improved or installed at 20 posts, and heating plants installed or improved in buildings already built at 8 posts. Seventy-four posts in the United States are now lighted by electricity, 9 partially or wholly by gas, including 2 lighted by acetylene. The remainder are lighted by mineral oil.

The army appropriation act of March 2, 1907, authorized the heat and light actually necessary for the authorized allowance of quarters for officers and enlisted men to be furnished at the expense of the United States, under such regulations as the Secretary of War might prescribe. This office had strongly advocated this provision as being in the best interests of the service, and in accordance with its recommendations the allowances were fixed and published in General Orders 61 and 136, War Department, 1907.

Roads and walks, etc.—Roads, walks, and bridges were constructed or improved at 102 posts, and railroads at 8. The amounts expended in connection with railroads were small, except at Fort Leavenworth, where a system of terminals is being installed.

Wharves.—New wharves were constructed at Alcatraz Island, Cal., Fort Liscum, Alaska, Fort Screven, Ga., and Fort Stevens, Oreg. Improvements, including additions, dredging, etc., were made at 49 posts.

Drainage, grading, and sea walls.—At 22 posts low swampy lands were drained or filled, the grounds graded, or other improvements of the kind made.

Work is now progressing satisfactorily on a concrete sea wall at Fort Screven, Ga., for which $50,000 was appropriated by Congress.

Financial.—The sums authorized to be expended for the above and other work in charge of this branch during the fiscal year were as follows:

Army transportation	$1,216,283.29
Regular supplies	626,717.20
Incidental expenses	32,395.32
Barracks and quarters	15,415.05
Military post exchanges	6,067.40
Total	1,896,878.26

TRANSPORTATION.

Transportation was furnished during the fiscal year, exclusive of the Philippine Islands and Cuba and of the army transport service, as follows:

Class.	Railroad.	Water.	Wagon.	Express.	Government vessels.[a]	Total.
Passengers:						
Officers	6,418	404	48	.....	82,628	89,498
Men	88,801	7,719	274	.....	1,273,314	1,370,108
Total	95,219	8.123	322	.....	1,355,942	1,459,606
Animals:						
Horses	12,097	718	.....	[b] 1	799	13,615
Mules	6,117	438	.....	[b] 63	550	7,168
Total	18,214	1,156	.....	64	1,349	20,783
Stores:						
Quartermaster ..... tons	33,434	27,894	11,667	132	30,167	103,294
Subsistence ..... do	17,522	9,049	5,340	16	8,357	40,284
Ordnance ..... do	18,380	4,109	1,955	1	4,737	29,182
Medical ..... do	1,152	663	313	5	254	2,387
Signal ..... do	3,238	1,229	817	7	1,665	6,956
Miscellaneous ..... do	18,489	3,467	9,357	5	15,265	46,583
Total	92,215	46,411	29,449	166	60,445	228,686

[a] Includes all passengers carried on Government ferryboats between seacoast posts and adjacent cities.
[b] Pack trains in connection with Cuban expedition.

Compared with last year, there was an increase of 13,164 in transportation of passengers and of 11,961 animals by rail, due principally to the movement of troops to Cuba and increased shipment of animals to the Philippines. There was a decrease in transportation of passengers by water, wagon, and Government vessels, and an aggregate decrease of 388,231 in passengers transported. There were decreases in shipments of stores by rail, except for the Quartermaster's Department and Signal Corps; increases by water, except for the Subsistence and Ordnance Departments; decreases by wagon, except for the Ordnance Department and Signal Corps, and very marked decreases in express shipments for all departments. Shipment of stores were decreased an aggregate of 48,369 tons.

Report shows the transportation in Cuba of 17,836 passengers, 1,576 animals, and 18,174 tons of supplies.

Shipments in deep-sea commercial vessels.

Destination.	Government merchandise, forage, etc.	Lumber.	Animals.	Passengers.	Cost.
	Weight tons.	*Board feet.*	*Number.*	*Number.*	
Manila	10,502	661,908	.....	.....	$119,170.11
Cuba	16,639	.....	.....	8	25,616.38
Porto Rico	5,906	.....	.....	28	10,857.65
Alaska	15,690	1,947,811	6	82	178,815.77
Other ports	11½	5,014	2	.....	112.56
Total	48,748½	2,614,793	8	118	334,572.47

All of the above was in American bottoms except 3,401 weight tons, costing $75,718.99, shipped to Manila via the Suez Canal in foreign bottoms, no American vessels being available. Included was a

considerable quantity of ammunition, and the rate charged for that, together with cubic tons taken at vessel's option, accounts for the seemingly high cost.

Shipment of change of station allowances.—At this early date reports as to quantities shipped and cost are so incomplete it is impossible to submit figures. In this connection it is recommended that authority be given to pack and crate officers' authorized change of station allowance as an incident of transportation.

HARBOR BOAT SERVICE.

There were in service in the United States during the fiscal year 87 owned vessels, distributed among the various harbors along the Atlantic and Pacific oceans and Gulf of Mexico, engaged in quartermaster, artillery, and signal-service work, the entire cost of operation, wages, fuel, supplies, repairs, etc., being $709,032.78.

In addition to the owned vessels, chartered vessels were in service in the artillery districts of Charleston, Savannah, and Narragansett.

The chartered vessel in the Charleston district was in service transporting troops and supplies between Wilmington and Fort Caswell, N. C.; also performing artillery service, when required, at an annual cost of $6,100.

In the Savannah district the chartered vessel was engaged in transportation work between Beaufort and Port Royal, S. C., and Fort Fremont, S. C., at an annual cost of $5,210.

In the Narragansett district, to provide suitable steamer service between Fort Greble and Newport, a contract was entered into May 9, 1907, at a cost of $35 per day for operation of a suitable ferryboat between Fort Greble, Saunderstown, and West Jamestown; the contractor also furnished a steamer for artillery purposes, when required.

With these exceptions no annual charters were made, and all service was performed by owned vessels, except when it was necessary to hire vessels for short periods as substitutes for owned vessels undergoing repairs or to perform emergency service for the Artillery Corps. The total expenditure for charter of vessels amounted to only $27,234.50.

CONSTRUCTION OF VESSELS.

At the beginning of the fiscal year there were under construction the following vessels: Four 86-foot artillery steamers, costing $196,258; four 60-foot cabin launches, $51,880.

Three of the 86-foot steamers have been completed and accepted, and were recently named and assigned to service as follows: *Major A. G. Forse*, Portland Harbor; *Captain T. W. Morrison*, Boston Harbor; *Captain C. W. Rowell*, New London district.

The fourth, named *Captain A. M. Wetherill*, has been delayed in completion in hands of the builders, but will be ready for service in thirty days, and will be stationed in southern New York district.

The four 60-foot launches were also accepted, named, and assigned as follows: *Lieutenant Gregg*, Fort Howard, Md.; *Lieutenant Lee*, Jamestown Exposition; *Lieutenant Shipp*, Jamestown Exposition; *Lieutenant Drew*, Portland district.

The assignment of the *Lee* and *Shipp* to the Jamestown Exposition is only temporary, and upon completion of duties at that point they will be assigned to permanent station at Fort Moultrie and Fort Dade, respectively.

PURCHASE AND SALE OF VESSELS.

The following vessels were purchased from funds pertaining to the fiscal year 1907: *Florence*, gasoline launch, Boston Harbor, $1,900; gasoline launch for cable steamer *Field*, $1,200; *Cub*, tug, Valdez, Alaska, $3,000.

The *Wilkerson*, 30-foot launch, Fort Howard, Md., was sold for $75.

NEED OF MORE TORPEDO PLANTERS.

The Coast Artillery feels the need of an increase in the number of torpedo planters available for its uses. One more is necessary for the Pacific coast, to allow a vessel to be assigned to duty with the artillery posts in the harbors of San Francisco and San Diego, and one for the artillery posts on the Columbia River and in Puget Sound. This additional planter would not only complete the number necessary for instruction purposes in the United States, but in addition would insure each of the two important portions of the Pacific coast having available at any time a vessel fully prepared for planting submarine mines.

The submarine mine defense of the Philippine and Hawaiian Islands should not be dependent upon the possibility of suitable boats being by chance in their harbors at time of need. It is necessary that these important places be entirely prepared for rapid and efficient mine planting. This would require one planter for Manila, one for Subic Bay, one for Pearl Harbor, and one for Honolulu.

ARMY TRANSPORT SERVICE.

The vessels of the army transport service owned and operated by this Department are the same as reported in the last annual report, with the addition of the *Ingalls*, heretofore attached to the Philippine interisland service:

Name.	Class.	Location.
Buford	Troop ship	In service about ten months.
Burnside	Cable ship	Cable work between Puget Sound and Alaska.
Crook	Troop ship	In commission for trip to Alaska.
Dix	Freight ship	In service between Seattle and Manila.
Ingalls	Troop ship	In commission for trip from Manila to Newport News.
Kilpatrick	do	Newport News-Habana service.
Logan	do	In service between San Francisco and Manila.
McClellan	do	Undergoing repairs at Singapore.
Meade	do	In commission for trip from Manila to Newport News.
Sheridan	do	Undergoing repairs at San Francisco.
Sherman	do	In service between San Francisco and Manila.
Sumner	do	Newport News-Habana service.
Thomas	do	In service between San Francisco and Manila.
Warren	Freight ship	Out of commission, San Francisco Harbor.
Slocum	Tug	In service, San Francisco Harbor.

REGULAR TRANS-PACIFIC SERVICE.

The *Logan*, *Sherman*, and *Thomas* have maintained an uninterrupted service between the United States and the Philippine Islands, carrying both passengers and freight, and the *Buford* has made one round voyage, taking relief supplies to China and returning from Manila with troops.

Schedule.—A twenty-day schedule was in force until August, 1906, when it was found necessary, on account of the accident to the *Sher-*

idan, to resume monthly sailings, and since that time the transports have left San Francisco on the fifth day and Manila on the fifteenth day of each month, unless these dates fell on Sunday or a holiday, in which case on the next succeeding day. This monthly schedule provides from twelve to fifteen lay days at Manila and from twenty to twenty-three at San Francisco in which to make preparation for the return trip.

IRREGULAR SERVICE.

Besides the transports operating under the regular schedule between the Pacific coast and Manila, carrying passengers, supplies, mail, etc., the following irregular service has been accomplished:

The *Dix* has made two round voyages to Manila, carrying 6,487 tons freight (including 4,078,889 pounds of hay and 1,695,570 pounds oats), 1,475,098 feet of lumber, 1,018 animals, 8,037 tons coal (taken at Nagasaki for discharge at Honolulu for use of the transport service), and a total of 90 passengers, including the enlisted men of the Tenth Cavalry, serving as caretakers for the horses of that regiment. The records show that only 5 public horses and 1 private horse died en route, or about one-half of 1 per cent of the number carried. The deaths were mainly from colic, the surviving animals arriving in better condition than when placed aboard ship.

At the close of the last fiscal year the *Buford* was engaged in the transportation of troops and supplies to Alaska and return, on which trip she carried 51 officers, 1,041 enlisted men, 97 civilians, and 1,504 tons of troops' property and general supplies. Soon after the service was completed the vessel was unexpectedly called upon to go to Honolulu to assist the stranded *Sheridan*, and sailed from Seattle on September 4, 1906. With the help of the U. S. A. T. tug *Slocum* the disabled vessel was towed to San Francisco, arriving November 22, 1906. The *Buford* was then held in reserve until April 30, 1907, when she sailed for Chinkiang, China, via Honolulu and Nagasaki, with a cargo of flour for destitute Chinese, donated through the American National Red Cross Society. After unloading the ship proceeded to Manila, where two battalions Nineteenth Infantry were embarked and brought to the United States.

The *Logan*, sailing May 6, 1907, carried about 1,245 tons of flour received from the same source, which could not be accommodated on the *Buford*, discharging same at Woosung, June 20–21, 1907, while on the return trip to the United States.

The *Crook* was placed in commission and sailed from San Francisco on June 15, 1907, with the Second Battalion Twentieth Infantry, which was disembarked at Honolulu, and the Third Battalion Tenth Infantry was taken aboard for station at various posts in Alaska. After successfully completing this special service, during which 26 officers, 549 enlisted men, and 69 civilians were carried, the vessel returned to San Francisco via Seattle.

The *Burnside* has been utilized under the direction of the Chief Signal Officer in laying and repairing cable between Seattle and Alaska and between artillery posts about Puget Sound. The vessel has rendered no service to the Quartermaster's Department during the period, but the expense of maintenance, amounting to $145,836.44, has been a charge against its appropriations.

Work of the trans-Pacific transports.—There were 16 sailings from the United States to Manila on which were carried 365 officers, 3,569 enlisted men, and 1,405 civilians; total, 5,339. From Manila to the United States there were 20 sailings, carrying 515 officers, 5,167 enlisted men, and 2,355 civilians; total, 8,037. There were transported on these voyages between the United States, the Philippine Islands, Hawaiian Islands, and Guam 37,816 tons measurement of freight, 1,475,098 feet of lumber, 1,028 animals, 123 remains, 301,714 pounds of mail, and 26,451,511.93 dollars, or pesos, in money.

SPECIAL SERVICE.

In March, 1907, the *Sumner* was used to transport the members of certain Congressional committees from Washington to Fort Monroe, for the purpose of inspecting the fortifications of that post and of witnessing the trial of ordnance installed thereat. This vessel was also utilized to bring the Twenty-third Infantry from the Jamestown Exposition to Washington to participate in the ceremonies connected with the unveiling of the McClellan statue on May 2, 1907.

The *Sumner* was later employed to carry the corps of cadets from West Point to the Jamestown Exposition and return. On these special trips the vessel carried 91 officers, 858 cadets, 1,128 enlisted men, and 133 civilians.

To save time, give officers opportunity to take their families with them, and transport their goods and baggage with less expense and more convenience; also to give the enlisted men better quarters and a more pleasant means of travel than by rail, the *Kilpatrick* was designated to accomplish the interchange of station among coast artillery companies, provided for in General Orders, No. 169, War Department, 1906, and left New York for the purpose on April 1, 1907, and returned to Newport News, Va., on May 13, 1907, having embarked and disembarked troops from posts in the vicinity of Portland, Boston, Newport, Baltimore, Key West, Tampa, Pensacola, New Orleans, Savannah, Beaufort, Charleston, Wilmington, N. C., Philadelphia, and New York. The distance involved in this trip was 6,089 miles, and a total of 21 officers, 1,390 enlisted men, 81 civilians, and 448,567 pounds of baggage, etc., were transported.

Maj. Charles L. Phillips, Artillery Corps, commanding the troops, said of this movement in his report:

> I can not recommend too highly this method of moving troops, especially where there is no question as to time. The men are more comfortable, are better and more easily subsisted, and arrive at their station in condition for immediate work. It gives them what amounts to a furlough and, in this case at least, showed them parts of the country they would never have visited except under these conditions. It is, I believe, better in every way than moving by rail.

The actual saving to the Government effected by making this movement by water instead of rail was over $10,000, without considering saving to the officers and enlisted men by reason of transporting their families and household effects free.

ACCIDENTS.

While entering the harbor of Guam on the morning of July 5, 1906, the *Thomas* struck a reef from which, after shifting cargo, she was floated, two days later, with no apparent damage, and proceeded to Manila without further incident. The reef has since been buoyed.

On August 31, 1906, the transport service sustained the most serious accident in its history when the *Sheridan* grounded upon a reef near Barber's Point, Hawaiian Islands. All passengers and their baggage were promptly taken to Honolulu and thence to San Franciso by later transports. The ship was held about 70 feet of its length amidship, and repeated efforts with all assistance available in the vicinity failed to dislodge her. The *Buford* was immediately dispatched from Seattle; a wrecking outfit and material, a party of wreckers, and the tug *Slocum* were sent from San Francisco. After strenuous work, night and day, the coal and cargo were removed, and damage repaired so that, on October 2, it was possible to pull the vessel off the reef; but while being towed to Honolulu the ship listed to such an extent as to necessitate beaching to prevent sinking. On October 6, however, after great difficulty, she was finally brought to Honolulu, where temporary repairs were made which enabled her to be towed to San Francisco, at which port she arrived on November 22, 1906. The work of restoring the ship to her former condition was given to the Navy, whose estimate of $407,759 was materially less than any other received. The *Sheridan* was turned over to the navy-yard, Mare Island, on April 26, 1907, and the repairs were well under way at the close of the fiscal year.

On March 29, while the *Sumner* was lying at the dock in Habana Harbor, fire was discovered in a storeroom in which were kept the steward's supplies. After the cargo had been removed so that access could be had to the storeroom, the flames were speedily extinguished with little damage to the ship. Stores to the value of about $1,500 were destroyed and some cargo was damaged by water.

RESCUE WORK.

Under instruction of the Secretary of War the *Buford*, then at Honolulu assisting the *Sheridan*, was ordered to Midway Island for the relief of the stranded steamship *Mongolia*, from which place she returned on September 28, 1906, bringing 509 persons.

On April 30, 1907, the *Dix* rescued the crew of the Japanese schooner *Tenjinmaru*, consisting of 7 persons, and carried them to Manila. The vessel had been dismasted in a storm and had drifted eighty days with a broken rudder, during which time the crew suffered terrible privations.

NEW FEATURES.

Wireless telegraph.—The installation of wireless telegraph apparatus on the transports mentioned in the last annual report has been successfully completed on the *Thomas* and *Sherman*, and the system will soon be placed in active operation on the *Logan*, the cableship *Burnside*, and eventually on the *Sheridan*, also upon the *Kilpatrick* of the Atlantic service. The Department is indebted to the Chief Signal Officer of the Army for providing the plans and working out the details connected with the introduction of this feature, now a part of the equipment of modern passenger steamships. Messages from transports 700 miles out were heard with perfect distinctness by the San Francisco stations, and the Honolulu office was advised about a day in advance as to the passengers, mail, and freight aboard, and the coal and other supplies required. The utility of the wireless outfit aboard ship is unquestioned at all times,

but in case of breakdown or accident at sea, where assistance is imperative, the ability to communicate with the shore would be an advantage of the greatest moment.

Submarine signals.—The *Kilpatrick* and *Sumner* have been equipped with a system of submarine signals by which the vessels can be definitely advised during a fog or heavy weather of the near approach to the shore, or points of danger, by direct communication with light-houses, light-ships, or other vessels provided with similar apparatus. This is a very important safeguard to the passengers carried by the transports.

Repairs.—All the trans-Pacific transports are carefully examined by a board immediately after return to their home ports, and bids are then invited for such repairs as are considered necessary before the next voyage. These repairs, which for each have averaged about $8,000 per voyage during the year, have kept the transports in fair running condition, although it is contemplated as soon as practicable to withdraw each of the regular transports in turn for more general overhauling than can be given in the short time between trips.

The only extensive repairs during the year (except those of the *Sheridan* and *Dix*, which were mentioned in the last annual report) were in connection with the *McClellan*, which was found to require new boilers and other repairs to the extent of about $63,000. The work was done at Singapore, and the vessel returned to Manila about the close of the fiscal year.

Vessels out of commission have been repaired from time to time as required to keep them ready for prompt service, as well as to offset deterioration, as follows: For the *Sumner*, $17,004; *Meade*, $28,562.13; *Kilpatrick*, $25,198.45; *Ingalls*, $5,298.92; *Buford*, $11,057.30, and the *Warren*, $9,272.52.

Coal for transports.—Because it is economical the bulk of the coal required for the trans-Pacific transport service is procured at Nagasaki, Japan, where upon the return trip to the United States all transports take aboard coal to their cargo capacity. It is carefully inspected, screened three times, picked over twice for stone, and sorted for dust and slack before delivery. The coaling is done very rapidly, as much as 3,063 tons having been put aboard in a working day of ten hours. A reserve supply is brought to Honolulu by the *Dix* and held there for issue to the transports as required.

Service for other Departments.—There have been transported during the year on army transports for the other Executive Departments, and for the insular government of the Philippine Islands passengers and freight entitled to transportation at Government expense, the value of which at the public commercial rates would be as follows: Navy Department, $84,753.40; Post-Office Department, $93,105.27 (including 301,714 pounds of mail); Treasury Department, $1,392.58; Philippine government, $129,398.55; total, $308,649.80.

SERVICES, EXPENSES, AND EARNINGS.

During the fiscal year ending June 30, 1907, the regular army transport service has transported: Passengers, 24,941; animals, 1,043; lumber, 1,495,893 feet; mail, 301,714 pounds; money, 26,451,-511.93 dollars or pesos; freight and general supplies, 87,692 tons.

The value of this service based upon the lowest rates offered for similar service by commercial lines is: For passengers, $1,276,831.92; for freight, $802,888.98; total, $2,079,720.90. At the regular commercial rates the earnings would aggregate: For passengers, $1,282,497.42; for freight, $839,982.98; total, $2,122,480.40.

No credit has been taken in the above figures for the transportation of families of officers, soldiers, and employees or other persons not entitled to public transportation payable from an appropriation of the Government; nor for persons, animals, money, or supplies carried for the insular government of the Philippines; nor for the transportation of 3,869½ tons of flour donated for the relief of destitute Chinese through the American Red Cross Society; nor for coal transported for use of army transports. The value of such gratuitous service during the year based on the lowest rates offered is: For passengers, $504,047.40; for supplies, $57,113.52; total, $561,160.92. At regular tariff rates, however, the service would be worth: For passengers, $512,663.30; for supplies, $57,113.52; total, $569,776.82.

The total expenditures for the operation and maintenance of the transports and the expenditures connected with the conduct of the army transport service at the various ports were $2,836,294.05.

Included in these expenditures is the cost of operating the *Burnside* while engaged in cable work for the Signal Corps of the Army, $145,836.44; operations of the *Buford* in carrying relief supplies to China (less credits taken), $43,847.94; operations of *Buford* from Honolulu to Midway Island and return for relief of the *Mongolia*, $7,038.68; total, $196,723.06.

Inasmuch as this service was not performed in the interests of the Quartermaster's Department, the expenditure therefor should be deducted, leaving the cost to the Government on account of transportation of troops, supplies, etc., and maintenance of transports, both active and inactive, during the fiscal year; total, $2,639,570.99.

The earnings of transports during the fiscal year at lowest commercial rates obtainable were $2,079,720.90; at public commercial rates, $2,112,480.40.

The apparent loss to the Government by the transports over similar service by commercial vessels, at lowest commercial rates, was $559,850.09; at public commercial rates, $527,090.59.

NOTE.—No proposals were received for transportation of passengers and freight by commercial lines from San Francisco to Manila, which accounts for the small difference between lowest rates offered and regular commercial tariff.

A comparison of this report with that for the preceding fiscal year shows that 10,007 less persons, 46,221 less tons of freight, and 1,540,102 less feet of lumber were carried by the transports to the Philippines, Hawaiian Islands, and Guam during the year 1907 than during the fiscal year 1906. This reduction in the persons and freight transported has reduced the earnings of the transports over $1,197,140.22 on the basis of the lowest obtainable rates and $1,338,157.72 on the regular commercial rates, and the expenses have been greatly augmented by the extensive repairs to the *Dix* and loss of one trip to Manila in consequence thereof; by the expenses of salvage and repair of the *Sheridan*, and by the use of the *Buford* and *Slocum* in connection with the salvage of the *Sheridan*, and by the transfer of the *Ingalls* from the Philippine interisland service to Newport News.

The ninth year of the transport service thus closes with a loss as compared with the cost of the same service by commercial lines; but it is still evident that there is wisdom in having a fleet of vessels available at all times for any movement of troops which may be necessary. The initial cost and delay of refitting commercial ships for the transportation of troops and animals, even if obtainable under charter in time of need, renders it obligatory for the Army to maintain proper means of sea transport. Aside from being prepared for emergencies, the ever-present necessity for the transportation of troops and supplies to and from the Philippines, Honolulu, and Guam demands that the Government shall have available ships specially prepared with every convenience for the welfare and comfort of officers and enlisted men ordered to take station in these distant fields, and for their families to go with them without paying the practically prohibitive rates charged by commercial ships.

The transports are now fitted with everything at command for the well-being of the troops being transported. The quarters are well ventilated and sanitary, bunks are clean and comfortable, arrangements for cooking and serving meals are complete, each vessel being equipped with a refrigerating system which enables the supply of fresh meats, vegetables, etc., en route, while the sick bay and arrangements for care of the sick are as perfect as modern medical skill can devise. Troops from the United States reach the Philippines in condition for immediate service, while those returning are bettered by the voyage.

Without the transports, service in the Philippines would be rendered extremely repugnant to both officers and enlisted men. With this service it is possible for those desiring to take their families with them at a cost which they can afford, to return members of their families to the United States in case of sickness, and to take advantage of leave to visit the United States, if necessary or desirable. There are very few officers and undoubtedly no enlisted men who could afford these things if compelled to pay even the very lowest rates ever offered the Department between Pacific coast ports and Manila, while the embarrassment consequent upon any man's attempt to support a family in the United States and meet his own living expenses in the Philippines must be obvious.

THE ATLANTIC TRANSPORT SERVICE.

Orders for the occupation of Cuba by the United States troops received September 29, 1906, found only one transport, the *Sumner*, on the Atlantic coast. This vessel was prepared for instant service and sailed from New York on October 2, 1906, immediately upon embarkation of the troops designated to sail. Eight hundred and seventy-eight officers and enlisted men of the Fifth Infantry and the Second Battalion of Engineers were carried and, as the advance guard of the army of Cuban pacification, arrived in Habana on October 6, 1906.

The necessity for the establishment of a regular service between the United States and Cuba for the transportation of troops and supplies soon became apparent, and to meet the demand the *Sumner* has made 12 round trips, carrying an aggregate of 261 officers, 4,005

troops, 1,046 civilians, and 42,883 tons of freight. The service now in force provides for semimonthly sailings, leaving Newport News on the 1st and 15th and Habana on the 7th and 22d of each month.

Work of the Atlantic transports.—There were 18 sailings from the United States to Cuba, on which were carried 132 officers, 1,862 enlisted men, and 434 civilians; total, 2,428. From Cuba to the United States there were 18 sailings, on which were carried 129 officers, 2,143 enlisted men, and 612 civilians; total, 2,884.

CHARTERED TRANSPORT SERVICE.

Directions were given this office on September 14, 1906, to prepare for a possible movement of troops to Cuba. Had there been transports available, the problem would have been a simple one. As it was, however, demands of the service had called all but one transport to other parts of the world, and it was necessary to depend upon such commercial vessels as were available. Steps were at once taken to learn what suitable vessels could be obtained, the dates when available, and charter prices. Ship owners consulted cooperated heartily with the Department, although they could not of course withdraw vessels from their commercial uses until definitely assured they would be taken by the Government. Orders for the movement found the Department in position to handle it with a celerity that has brought many gratifying commendations, although when the order was finally given some of the vessels promised when required were at sea and out of reach. This movement emphasized the value of having transports ready and fitted for carrying troops.

Immediately upon the receipt of orders on September 29, 1906, directing troops to proceed to Cuba, steps were taken to supplement the regular transport service with vessels from the merchant marine sufficient to promptly dispatch the expedition. To this end 21 steamships were chartered. As soon as possible the necessary refitting for the accommodation of troops and animals was under way, and by the third day the vessels began to leave New York for Newport News, Va., where the troops and animals were being assembled from various posts throughout the United States. Embarkation proceeded promptly, so that the first ship was able to clear for Cuba on October 7, three on October 8, two on October 9, and others in rapid succession, the entire expedition of 265 officers, 4,097 enlisted men, 381 civilians, 3,700 animals, and approximately 11,818 tons of supplies for the Army in the field being afloat by October 19. One of the ships, the *Andes*, was fitted up at Tampa, Fla., sailing therefrom on October 7, and was the first of the chartered vessels to land troops in Cuba. All the vessels were returned promptly to the United States, restored to their original condition, and charters canceled after making one trip, except the *Kanawha*, which was utilized for a second voyage to carry animals, forage, and other supplies. The total expenditure in connection with these vessels, including charter, fitting up, fuel, restoration, pilotage, stevedoring, and other necessary operating expenses, was $642,943.93, or an average of about $1,162 per day for each ship under charter. The shore expenses, including proportionate charge for salaries and commutation of officers' quarters, rent of offices, wharves, warehouses, etc., amounted to $52,089.99, a total cost of $695,033.92 for the chartered service.

Loss of animals.—The chartered transports *Cubana* and *Kanawha* while en route to Cuba were overtaken by the severe tropical storm of October 17–18, 1906, and while fortunately no human life was lost, 112 animals on the former and 99 on the latter perished.

THE PHILIPPINE INTERISLAND SERVICE.

Owned vessels.—During the fiscal year there have been maintained in Philippine waters the following vessels engaged in the transportation of passengers and supplies to the various interisland ports, viz: *Liscum*, cable ship and general carrier; *Sacramento* (a steam lighter erroneously classed as a transport, recently inspected and ordered sold); *Seward* and *Wright*, regular passenger, freight, and refrigerator transports. The *Ingalls*, *Kilpatrick*, and *Buford* have also made one or more trips to various island ports.

There were transported by these ships between Manila and other ports, 6,263 passengers entitled to Government transportation, also 33 remains, 15 animals, 12,918 cubic tons freight, 156,955 feet lumber, 1,391,189.25 dollars or pesos in money, the value of which at commercial rates was $276,934.13. In addition thereto 1,842 passengers, 958 tons of freight, 126,902 pounds mail, and 21,783.68 dollars or pesos in currency were transported for which no credit was taken. The expenses connected with this service aggregated a total of $212,501.09.

After allowing the proper proportion for shore expenses chargeable to this service the net earnings of the six transports at regular commercial rates were $50,529.74.

Chartered vessels.—There have been employed under charter at various periods during the fiscal year 11 steamships which have carried between island ports 12,901 passengers entitled to transportation at Government expense, 584 animals, 30 remains, 50,596 cubic tons freight, 1,715,509 feet lumber, and $595,027.70 in money, the value of which at commercial rates was $294,629.35. There were also transported 5,429 passengers, 1,029 cubic tons freight, 108,108 pounds mail, and $4,290 in money, for which no credit was taken. The expense for this service aggregated $277,276.30.

After charging this service with proper proportion of the shore expenses at Manila the net earnings of the several chartered transports were $3,449.75.

The net earnings of the interisland service were: Owned transports, $50,529.74; chartered transports, $3,449.75; total saving to the United States over the cost of the same transportation at regular commercial rates, $53,979.49.

NOTE.—This report of the interisland service covers only the period from July 1, 1906, to April 30, 1907.

REGULAR SUPPLIES.

Consideration of the purposes of this appropriation as set forth in the army appropriation acts will show that it is one very directly affected by market conditions. Aside from the portion used in installing lighting fixtures and heating plants and fixtures in connection with construction of buildings and the extension of existing plants, the bulk of it is used for the purchase of supplies that are

consumed from day to day, as in the purchase of fuel for heating, cooking, and operation of machinery, purchase of engine supplies, purchase or supply of lights, purchase of forage for all animals in the service, and the authorized issues to mounted officers, stationery, blank books, payment for printing, etc. The demands would remain to all intents and purposes the same so long as the strength of the Army was not materially reduced and there was neither expansion of needs nor increase of purchase prices. But there has been an increase in the artillery arm of the service; there is expansion in the operation of power plants, searchlights, etc., at coast artillery posts, and more posts are being lighted by electricity, which draw heavily upon fuel and engine supplies; the number of animals necessarily increases, requiring more forage; the class of barracks and quarters, hospitals, administration buildings, etc., now constructed according to modern sanitary requirements require more heat and light than those of the obsolete, small, cramped, illy ventilated style, heated by stoves and lighted by oil lamps; while the increasing prices of the past few years are of public knowledge. During the past year this office has urged economy to an extent that must almost have become an irritation to those compelled to listen to it, and has limited issues and purchases almost to the point of denying necessities in an effort to keep expenditures within appropriations, particularly this one, and is convinced that not only provision for the future but best results as well as imperative necessities demand an increase in this appropriation.

Forage.—There were purchased during the fiscal year 233,447,651 pounds of forage at a cost of $2,264,568.15. This was 7,248,277 pounds less than for the preceding year, but cost $176,237.12 more than the purchases of that year.

Fuel and mineral oil.—Purchases of fuel of all kinds other than for transports, harbor boats, torpedo planters, and cable ships, and mineral oil for lighting, aggregated $1,944,811.60, from appropriations as follows: Regular supplies, $1,589,723.79; incidental expenses, $5,905.33; army transportation, $345,829.92; Army War College, $3,352.56. The total expenditures for these purposes exceeded those of the preceding fiscal year by $418,306.76.

Fuel for transports and harbor boats.—Purchases of fuel for transports amounted to $502,094.93, a decrease during the fiscal year of $156,465.65.

For harbor boats, torpedo planters, and cable ships the cost of fuel was $147,147.73, a decrease of $19,674.64.

The net increase in expenditures under the above two heads was $242,166.47.

Miscellaneous supplies.—The total cost of miscellaneous supplies purchased, including portable bake ovens, field and army ranges, cooking and heating stoves, laundry outfits, safes, field desks, lamps, kitchen utensils, tableware, paulins, typewriters, coffins, etc., was $306,644.85, an increase over the preceding fiscal year of $206,664.09.

Purchase of animals and means of transportation.—Following is a statement of purchases, remounts, draft and pack animals, vehicles, and articles pertaining to transportation, viz:

	Number.	Total cost.	Average cost each.
Cavalry horses	1,372	$195,252.80	$142.31
Artillery horses	186	33,365.00	179.38
Riding horses	514	84,390.00	164.18
Draft horses	121	28,985.88	239.55
Pack horses	9	1,350.00	150.00
Bell horses	1	137.50	137.50
Draft mules	2,224	391,848.10	176.19
Pack mules	755	109,196.90	144.63
Riding mules	100	16,900.00	169.00
Automobiles	12	29,842.40	2,486.86
Ambulances (1900 pattern)	62	15,200.80	245.17
Ambulances, galloping	8	2,961.55	370.19
Escort wagons	448	50,743.77	113.78
Farm wagons	1	54.63	54.63
Spring wagons:			
Dougherty	16	3,618.00	226.12
Delivery	7	1,143.25	167.72
Station wagons	22	8,459.30	384.51
Wagonettes or passenger	27	8,431.75	312.29
Water wagons	13	3,391.60	260.89
Express wagons	14	2,057.00	146.92
Miscellaneous wagons	51	8,831.90	173.17
Dump carts	109	5,222.25	47.91
Sanitary carts	57	11,349.00	199.10
Handcarts	277	4,921.80	17.77
Trucks, two-horse	8	3,812.00	476.50
Harness:			
Single sets	992	20,816.50	20.96
Double sets	116	7,527.65	64.90
Cart, single sets	83	1,690.25	20.36
Saddles:			
Riding	90	1,710.06	19.00
Wagon	50	737.50	14.75
Pack	11	101.50	9.22
Sleighs	15	604.50	40.30
Bicycles	4	205.00	51.25
Total	.....	1,054,860.14	.....

The cavalry, artillery, and riding horses were purchased from the appropriation "Horses for cavalry, artillery, and engineers;" the draft and pack animals and other items were purchased from the appropriation "Transportation of the Army." With few exceptions, there was an increase in the cost of the above items over the preceding year. Cavalry horses averaged $21.65, artillery horses $4.31, and riding horses $31.21 per head higher; draft horses $6.20 lower and draft mules $3.72 higher; pack horses averaged the same as last year, but pack mules averaged $19.38 per head higher. Escort wagons cost $11.35 each more than last year, etc. Generally, the increases in cost were more marked than the decreases. The total expenditures for the above classes of supplies exceeded those of the last fiscal year by $599,710.13.

Condemned animals sold.

Kind.	Number	Amount Received.	Average price.
Cavalry horses	847	$52,951.95	$62.51
Artillery horses	268	15,083.46	56.28
Draft horses	74	5,047.49	60.10
Mules	224	15,269.37	68.16
Total	1,413	88,352.27	.....

There were sold during fiscal year 1907, to officers, 18 horses at an average price of $120.65, total $2,171.64; and to the Alaska road commission, 30 horses at an average price of $130.68, which amounts to $3,920.50.

During the year there were 474 horses and 304 mules lost, destroyed, died, etc., exclusive of those lost, destroyed, died, etc., in the Philippines and Hawaii (report from those places not having been received). Of the above animals lost, 168 horses and 159 mules were lost in Cuba, which includes 107 horses and 104 mules killed in storm at sea en route to Cuba, October 17 and 18, 1906.

There remained on hand at close of fiscal year 1907, 17,981 horses and 11,788 mules, less such numbers as may have been lost, destroyed, died, etc., in the Philippines and Hawaii, which includes 1,706 horses and 1,230 mules in Cuba, and 5,988 horses and 1,948 mules in the Philippines.

There were shipped during the year to the Philippines 958 horses and 469 mules.

Automobiles for military purposes.—Tests made of automobiles for military purposes and reports received as to their utility and cost of maintenance do not argue in favor of their substitution for any of the standard means of army transportation. These vehicles can rapidly transport persons and supplies over city streets or well-kept roads, but at the very best the cost of such transportation for army work is excessive. The high initial cost of these machines, the liability of damage to their complicated mechanism, tires, etc., with consequent disabling of the cars and frequency with which breakages or disabling accidents occur, together with the great expense of repairs, high wages of the necessary skilled chauffeurs, and their impracticability of operation over any but the best of roads and the smoothest terrain will, it is thought, prohibit use of the existing types as a substitute for any of the present means of army transportation.

PURCHASE OF HORSES AND MULES.

It has long been my opinion that there was need for reformation of the methods now and for a long time heretofore followed in the purchase of remounts and draft horses and mules for the Army. Based upon study and considerable practical experience in this line, certain definite conclusions have been reached which are submitted in very brief outline. Consideration of the plan is requested in the belief that it is a pronounced improvement upon the present system.

Under existing laws and regulations, public animals are purchased by contract after advertisement for bids by the Quartermaster's Department and inspected under direction of the Secretary of War; or, when practicable, are purchased in open market at military posts and stations when needed at not to exceed a maximum price fixed by the Secretary of War. The latter provision, which is a recent one, was intended by Congress to encourage local horse raisers and farmers to deal direct with the Government and offer an incentive to the breeding of horses suitable for army uses.

Experience during the last two years indicates that the purposes of Congress in authorizing open-market purchases at posts have not been developed to an appreciable extent, although such purchases as have been effected were generally of satisfactory animals.

REMOUNT SERVICE.

It is believed that the results contemplated in providing for open-market purchases at posts can best be obtained and the greatest advantages thereof secured to both horse raisers and the Army by the establishment of a remount service, to be a separate division of the Quartermaster-General's Office, designated "Remount division," and under charge of an officer of the Quartermaster's Department, specially selected by the Secretary of War, on the recommendation of the Quartermaster-General of the Army, who would supervise all purchases of animals.

There should be a main office (headquarters) located in the Quartermaster-General's Office, and three or more remount depots, to be properly organized, located, and equipped, and the same number of remount districts; all to be under supervision and control of the officer in charge of the remount division and subject to his inspection. To each of the three or more remount depots would be assigned a remount district, and each depot and its tributary district would be in charge of an officer of the Quartermaster's Department, preferably detailed from the cavalry or field artillery and especially adapted for this duty. Each depot would be provided such employees and equipment as needed to perform its functions.

There would now be no difficulty in securing officers competent to handle this work from among those who have received or are now receiving instructions at the school of equitation at Fort Riley, where the course is thorough and practical, and calculated to equip its graduates for such duties.

The location of the depots and detail as to personnel and equipment and boundaries of districts could be easily worked out and perfected were the system adopted.

Under the supervision of the officer in charge of the remount division, the officer in charge of each remount depot would have control of all matters pertaining to the management thereof, and be accountable and responsible for all animals, supplies, property, and funds necessary to the successful operation of the depot.

He would personally superintend the care and handling of the horses under his charge, and see to it that the horses were well fed and cared for, gently and kindly handled at all times, and properly exercised and broken.

When directed by proper authority, he would purchase young horses, to conform with specifications, within the district assigned to his remount depot, to which they would be shipped.

He would be required to acquaint himself with, and keep a record of, the number and class of horses, how bred (if possible), by whom owned, where located, and generally complete data of the horse and mule production of his district, and be prepared to direct a purchasing officer, or to go himself, to the place most suitable for the establishment of subdepots in case of an emergency, and where the best horses could be found.

Districts.—The object or purpose of the districts is to give each remount depot a particular section of the United States from which to receive its supply of young horses. It should include the stations of the mounted troops to be supplied from said depot, and definitely

fix a zone or territory with the horse production of which the officer in charge of the remount depot would fully acquaint himself and make of record.

AVERAGE LIFE OF ANIMALS.

The average life or period of duration of cavalry and artillery horses has heretofore been 6.4 years, and that of the mule 10.6 years.

In view of the fact that the young horses to be sent to the remount depots will be carefully selected and be purchased for remount purposes before they are worked down, injured, or spoiled by improper breaking, and since the number of remounts to be supplied annually is to be limited, which in time will result in the mount of each organization being composed of horses of ages from 4½ years up, the number of each age being approximately that supplied each year, it is submitted that the average life or period of duration of remounts for cavalry and artillery will be materially increased by this system of purchase and supply, and it is therefore taken at ten years, barring epidemics, etc.

For similar reasons, the average life of a mule is taken at 12½ years.

COST.

In considering the comparative cost of remounts supplied under the proposed system with the cost under the present system, it should not be overlooked that under the former in time of peace the number of remounts supplied would be reduced by one-third, and that there would be a proportionate reduction in the cost of transporting horses to the posts, which includes freight, attendants' wages, and return transportation, rent of stalled cars, etc. Therefore it is apparent that if the cost of the young remounts on leaving the depots is equal to or slightly greater than that of the aged horses under the present system, the net cost to the United States under the proposed system for a definite period of years would be at least one-third less.

By supplying young mules, from 3 to 4 years old, which can be purchased in connection with the young remounts at practically no increased expense, the life or period of duration will be increased in about the same proportion as that of the remounts; the Government will have the advantage of the growth and consequent increase in value, which for young mules is very considerable; they can be cared for with practically the same labor required to care for the remounts, and shipped with them, thus saving considerable for freight and attendants, and on the whole it is submitted that the present cost of remounts and draft and pack animals for the Army during a definite period would be reduced from 30 to 40 per cent.

TO MEET EMERGENCIES.

While the system of purchase and supply of animals outlined refers to time of peace, it provides for the assignment to duty in the remount service of at least four officers on duty in the Quartermaster's Department, and for a complete record of the numbers, location, and owners of animals suitable for the service throughout the United States. It is therefore submitted that within one or two years after the establishment of the remount depots there will be a sufficient number of officers familiar with the duties of the remount service, and the

information compiled by each remount depot will be so far completed that the Quartermaster's Department can on short notice establish subdepots in the best horse-producing sections of the districts for the supply of animals from 5 to 9 years of age by open-market purchase or otherwise, and be prepared to meet any emergency, such as war, requiring a large increase in the number of horses and mules for the Army.

ADVANTAGES.

Among the many advantages of this system of supplying horses to the cavalry and artillery may be mentioned the following:

The Army will be supplied with young, fresh, sound, and well-broken horses, in every way suitable for the service, and that have not been spoiled or injured while breaking, as is often the case under the present system.

These young horses will be fed grain and receive the best of care a year earlier, and therefore be much stronger and better animals when sent to the troops and batteries at from 4 to 5 years of age than if wintered by farmers or on the ranges and purchased a year later, as at present.

It creates a market for young horses from 3 to 4 years old, and the Quartermaster's Department would have few, if any, competitors; the first cost should therefore be less, and the Department as a buyer would be in close touch with the horse raisers and breeders.

The average life or period of duration of the horse will be longer, so that about one-third less number of remounts will be required yearly, with a corresponding reduction in expenditure.

The cost will be one-third less, as the Department will be able to select desirable young horses from all over the United States, whereas at present western horses, though in many cases well bred, are not desirable, as they are not broken, gentled, or handled until a week or two before they are offered for sale as cavalry or artillery horses, and when purchased many of them are never serviceable. This system will afford time and means to properly handle and break these young horses and to accustom them to man from an earlier age.

An opportunity will be afforded for a close and careful observance of all horses for several months before issued, and such as are found undesirable or not suited for the service can be disposed of from the depot. The Government would therefore save the freight to posts on such horses, and, since they are young, they should sell at the depot for nearly their first cost.

Horses will be uniform as to conformation, action, etc., and the special type desired will be standardized and understood by breeders and farmers.

Horses can be shipped in first-class condition in every respect and in cars that are sanitary; there should therefore be practically no sickness on arrival at posts.

Requisitions can be filled promptly without waiting for advertising and purchase, as at present, and horses of desired color can be sent to a particular troop or battery at no additional expense.

Finally, after a period of from four to ten years, required for development of the system and the supply of a large part, if not a complete renewal, of remounts from these depots, it is submitted that the United States Army will have the best mounts of any army in the world.

TEST OF PROPOSED SYSTEM.

The advantages of this system are believed possible of demonstration by practical test. While none of the abandoned military posts or those to be abandoned are in the best horse-raising regions, it is thought it would be of great benefit to the service if the department could have the use of some of them, like Fort Reno, as accessible as possible to good horse-raising country, where there are already buildings, etc., sufficient for the purpose, which could be utilized without extra expense, there to give this system trial with a few hundred young horses and mules.

It is believed that such a test would soon establish beyond question the superiority of this method, and justify its extension to cover the entire supply of remounts and draft and pack animals.

CLOTHING AND EQUIPAGE.

Among the most important duties of the Department is the purchase and manufacture of clothing and equipage supplies and their issue to the Army and the organized militia. This involves study of the needs of the various branches of the service, for different climates and conditions; research and experiment to develop and perfect articles to meet a wide range of wants, and carrying into effect such changes in these supplies as may be decided upon from time to time, involving the adoption of standard samples and preparation of specifications correctly describing the same; the technical inspection of the raw material, the processes of manufacture and the finished articles, as compared with the requirement of the specifications.

The following is a brief summary of only the most important features of this work:

Financial.

Appropriated for the fiscal year ended June 30, 1907	$3,000,000.00
To which were credited during the fiscal year reimbursements on account of issues of clothing and equipage supplies to the militia; collections by Pay Department on account of clothing drawn by enlisted men in excess of their allowance; from sales to officers, to the militia, surveying expeditions, Isthmian Canal Commission, and other miscellaneous and duly authorized sales	914,400.38
Total	3,914,400.38
The remittances to officers of the Quartermaster's Department at the general depots and elsewhere, for the purchase and manufacture of clothing and equipage for the Army, and other expenditures chargeable to "Appropriation for clothing and equipage," amounted to	3,272,396.98
Leaving a balance in the Treasury on June 30, 1907, which will be required to pay the outstanding indebtedness incurred prior to the expiration of the fiscal year, of	642,003.40

NEED FOR LARGER APPROPRIATION.

In his annual report for the fiscal year 1906, when the Department had for clothing and equipage an appropriation of $4,000,000, the need of a larger sum was urged by the Quartermaster-General in the following language:

> While a deficiency in this appropriation has been avoided, it has only been through curtailing much needed purchases and carrying a stock totally inadequate to meet emergencies. To meet the needs of the Army and give a safe working stock this appropriation should be $5,000,000.

This was a conservative estimate. Based upon the established allowances of clothing and equipage for the maximum strength of the Army, careful computation shows the cost of articles to be supplied from this appropriation to be, at prevailing prices, $5,833,699.29, for one year. It is therefore apparent that the $3,000,000 available during the fiscal year 1907, is inadequte to meet the wants of the Army and enable supply to the militia, much less leave any margin at all for a working stock or preparation for an emergency.

As a consequence of the decreased appropriations and the constantly increasing cost of materials, the very limited working stock at one time accumulated has become so reduced that practically no dependence can be placed upon it. One of the lessons of the Spanish war, that such a stock should be provided, has been rendered valueless through lack of funds. To use a homely phrase, the Department has been and is now compelled to pursue a "from hand-to-mouth" policy altogether disadvantageous, uneconomical, and to an extent, unsafe. In many instances the Army has been compelled to wait until the supplies could be manufactured by contractors, for the reason that purchases could be made only in small quantities, from time to time, as absolutely needed, on account of lack of funds. This involves increased cost for advertising as well as in cost of the articles themselves, which are always higher when purchased in small quantities. The Department is continually compelled to feel its way as to what should and should not be procured.

This is not a desirable or safe condition. The maxim "in time of peace prepare for war" applies forcibly to the uniforms for an army, a supply of which should always be in readiness for emergencies. Unless this is done the Department, as in 1898, will be severely and unjustly criticised for failing to accomplish the impossible.

It may not be amiss to enumerate concisely the various items upon which the above-estimated amount annually required for clothing and equipage is based, viz:

Purchase of cloth, woolens, and other materials entering into the manufacture of clothing and equipage	$1,945,024.34
Purchase of clothing not made by the Department	2,076,759.17
Manufacture of clothing by the Department	868,455.97
Altering and fitting clothing	31,717.50
Washing and cleaning	1,000.00
Purchase of equipage	347,397.04
Manufacture of equipage by the Department	53,949.27
Packing boxes, etc	127,480.75
Purchase of citizens' clothing for discharged prisoners	15,070.00
Machinery	3,045.00
Pay of employees connected with packing and for employees such as inspectors, clerks, etc	363,800.25
Total	5,833,699.29

CLOTHING AND EQUIPAGE SUPPLIES FOR THE MILITIA.

The lack of funds for and of a safe working stock of clothing and equipage also hinders this Department in carrying out the provisions of law requiring it to furnish the organized militia with quartermaster's supplies.

Section 1661, Revised Statutes, as amended by the act of Congress approved June 22, 1906 (sec., 1), makes an annual appropriation of $2,000,000 "For the purpose of providing arms, ordnance stores,

quartermaster's stores, and camp equipage for issue to the militia." Section 3 of said act provides that the purchase of such stores "shall be made under the direction of the Secretary of War, as such arms, ordnance and quartermaster's stores, and camp equipage are manufactured or otherwise provided for the use of the Regular Army."

Section 17 of the act of Congress of January 31, 1903, provides that—

> any State, Territory, or the District of Columbia may, with the approval of the Secretary of War, purchase for cash from the War Department for the use of its militia, stores, supplies, material of war, or military publications, such as are furnished to the Army * * * and funds received from such sales shall be credited to the appropriations to which they belong and shall not be covered into the Treasury, but shall be available until expended to replace therewith the supplies sold to the States and Territories and to the District of Columbia.

The appropriation for the purchase of clothing and equipage for the Army has been so reduced and the former limited working stock has become so depleted that it is a serious question how to supply the militia from the stores procured for the exclusive use of the Regular Army with the promptness and dispatch asked in nearly every instance.

While it is true that the appropriation for "Clothing and equipage for the Army" is reimbursed from the militia appropriation, reimbursement can not be made until the shipments to the States shall have been completed. Under a decision of the Comptroller of the Treasury dated June 15, 1903—

> any amount received by the War Department in reimbursement of the value of supplies sold to another Department should be credited to the appropriation for the fiscal year in which the supplies were delivered and the sale completed.

The effect of this decision is that when issues are made to the militia and delivery is completed within the last two months of a fiscal year for which reimbursement is placed to the credit of the appropriation of such fiscal year, it is impossible to use that reimbursement to replenish the stock from which the issues were made. Consequently, not alone the supplies issued are lost to this Department, but also the money in payment therefor, which can not possibly be made use of to replenish the stock thus depleted.

In view of the decision of the Comptroller, some action is essential to remedy the defects in the present system, and the following solution is submitted, viz:

The appropriation of a sum for the purchase and manufacture of supplies for a working stock from which the militia requisitions may be filled. A special appropriation of $1,000,000 is estimated to be sufficient.

Provide in the act making appropriations for the support of the Army that the money reimbursed to the appropriations of the Quartermaster's Department on the account of the issues or sales from the stock of army supplies be made available for its replenishment regardless of the date on which such issues or sales were made.

This office has no knowledge of the needs of the militia except as they are made known from time to time in requisitions forwarded by the governors of States and the commanding general of the District of Columbia militia. In nearly every instance the supplies are required for immediate shipment and therefore must come from those procured for the Army. The difficulty of meeting such a condition with no working stock and an appropriation inadequate for the Army itself must be apparent.

Issues to the militia.—There were issued during the fiscal year to the governors of the several States and Territories and to the commanding general of the District of Columbia militia, under the laws providing for new arms and equipments for the organized militia, clothing and equipage valued at $577,531.80, and for which appropriations of the Quartermaster's Department have been duly reimbursed. This is an increase of $31,900.79 over last fiscal year.

Sales to the militia.—There were sold during the fiscal year by special authority of the Secretary of War, under the law, to the governors of the several States and Territories, clothing and equipage supplies to the value of $39,762.10, including cost of packing preparatory to shipment. This is an increase of $27,148.92 over last fiscal year.

Gratuitous issues to the District of Columbia militia.—There were issued to the commanding general of the District of Columbia militia, by direction of the Secretary of War, during the fiscal year, under the provisions of law, and for which the Department will not be reimbursed, clothing and equipage to the value of $31,785.37, an increase of $2,923.12 over last fiscal year.

Sales to other Departments.—These aggregated during the fiscal year $57,244.51, the most important being to the Isthmian Canal Commission, $36,149.97; Marine Corps, $9,917.96; Interior Department, $2,415.49, and smaller amounts to several other Departments to make the above total. For this the Department is reimbursed.

Sales at auction.—These were generally of condemned clothing and equipage and cuttings at the general depots, and the sum realized above expenses of sales was $57,811.85. In the Philippines the sum from such sales in excess of expenses was $9,929.46, a total of $67,741.31. Money received from this source is covered into the Treasury as miscellaneous receipts and not available for use of the Department.

Replacing losses through the San Francisco earthquake and fire.—According to the report of the surveying officer the losses of clothing and equipage supplies amounted to $1,433,193.99, to replace which but $500,000 was appropriated. Purchases from this to the amount of $499,990.60 have been authorized.

San Francisco relief issues.—Purchases of clothing and equipage supplies to replace those issued for relief of the San Francisco earthquake and fire sufferers amounting to $702,378 were made and paid for from the relief appropriations. This practically reimburses the Department for the issues.

Issue of olive-drab overcoats.—The stock of sky-blue overcoats on hand having become depleted to such an extent that issues of the olive drab became advantageous this office recommended and General Order 184, War Department, 1906, provided for general issue of the latter, replacing the sky blue. Issue of the sky blue was to cease and issue of the olive drab to commence January 1, 1907, or as soon thereafter as practicable. Enlisted men who during their current enlistment had been provided with sky-blue overcoats were authorized to turn them in to their commanding officer and for those turned in a credit of $6.44 was to be given on the clothing accounts of such men. The overcoats turned in were shipped to the appropriate general depots and 16,736 have been received. There are also at the Philadelphia depot 6,832 sky-blue coats, which, while new, are

of such irregular sizes that they can not be made use of by troops. All these coats will be dyed brown and issued to prisoners as required.

Collar ornaments.—The collar ornaments for enlisted men are now provided with pins and catches which are liable to become unfastened and cause loss of the ornament.

A collar button fastened in the same manner as the cap device, of a size somewhat larger than a 25-cent piece, bearing in relief the number of regiment, letter of company, and device of arm of service, has been devised with a view to overcoming the objections to the present style. One hundred pairs will be purchased and distributed for trial in active service.

REVISION OF OLD AND ADOPTION OF NEW SPECIFICATIONS.

The Department during the last fiscal year has improved the quality of the clothing and equipage supplies procured for use of the Army. With this in view the following specifications have been revised and standard samples conforming thereto procured and adopted, viz:

Olive-drab light-weight woolen blankets; russet shoes for Philippine Scouts; suspenders; gymnasium shoes; buckskin gloves; buckskin gauntlets; tent pins; cotton drilling, unbleached; cap and collar ornaments for enlisted men; United States Army regulation buttons; russet garrison shoes; olive-drab serge; olive-drab shirting flannel; olive-drab kersey, 16-ounce; olive-drab kersey, 22-ounce; ax helves; khaki breeches, foot and mounted; brown cotton stockings; rubber ponchos; khaki service coats; improved marching shoes, Blucher style; summer drawers; percale shirts; metal tent slips; buckskin mittens; moose-hide moccasins; felt shoes; fleece-lined underwear; pillowcases; waist belts; camp hatchets; hatchet helves; Mackinaw coats; Mackinaw trousers; duck trousers, lined with Mackinaw cloth; pea jackets; fur mittens; uniform khaki cloth; breast cords; mess pans; canvas fatigue clothing; olive-drab coats; olive-drab breeches; olive-drab overcoats.

Elimination of articles of clothing heretofore prescribed for issue to enlisted men of the Army.—It has been determined that the following articles of clothing be no longer supplied to the enlisted men, thus reducing the variety of articles to be furnished to a minimum without infringing upon the efficiency of the Army. The stock on hand of the articles thus eliminated is to be absorbed, after which issues will cease.

The articles dispensed with are the following: Cork helmets, khaki and white, for which no demand exists; leather waist belts, for which woven waist belts will be substituted; rubber boots; muskrat caps, for which a more serviceable cap for winter wear by troops stationed in extreme northern latitudes will be furnished; white duck caps; white duck coats and trousers, except for enlisted men of the Hospital Corps on ward duty; winter drawers, heavy and light, it being the intention to confine issues exclusively to canton flannel drawers of an improved pattern; cotton knit and nainsook drawers, the jeans being deemed adequate for wear during the summer season; muskrat for gauntlets, in lieu of which a suitable horsehide glove, lined with lambskin, will be provided; canvas and woolen mittens, considered superfluous; hat letters, numbers, and ornaments, the same being deemed

unnecessary, as the metallic ornaments worn upon the service coat collar, as well as the hat cords, are considered a sufficient identification; overalls and stable frocks, unnecessary on account of the issue of brown canvas fatigue clothing to all troops; fur overcoats, which have heretofore been superseded by the very admirable canvas blanket-lined overcoat; pajamas, for which no recent demands have been made; barrack shoes, as scarcely any demand for them exists; russet garrison shoes (tan), the improved marching and black dress shoe being considered to meet all requirements of garrison and field duty; sweaters, not considered essential; undershirts, worsted, summer, and nainsook, as the cotton undershirts answer all purposes; undershirts, wool, heavy and light, for which a shirt of medium weight will be substituted.

Improvements in the fit of the uniform of enlisted men.—During the fiscal year this office has completed and perfected the improvements in the patterns of dress coats, overcoats, olive-drab and khaki service coats, and breeches for all the enlisted men, outlined in last year's report. Specifications and standard samples of these garments have been adopted and distributed to the general depots, and the khaki coats and breeches now being manufactured under contracts conform to the new patterns. Issues are being made as fast as the garments are available. Reports received indicate that the Department may well be satisfied with the results attained. One officer in command of a regiment serving in Cuba reports as follows:

> It is the first time in my long career that I have ever seen a command so completely, satisfactorily, and shapely fitted. The improved fit is such that it has called for general favorable comment by all who have seen these troops assembled. All praise the most satisfactory change, and if no further improvements are made, it is a success well merited, well won.

Leggings.—While the legging described in the annual report of last year proved, after continued trial, to be a distinct improvement over the old style, it was not entirely free from defects, and it was apparent that there were possibilities of improvement in this article of uniform. Further study of the problem developed a cotton-duck strap puttee legging of the same pattern as the leather strap puttee prescribed for officers, and 1,000 pairs were purchased and distributed for trial by troops. Some minor mechanical defects developed during the trial, which, being perfected will, it now seems, give the Army the most serviceable and economical legging that can be devised.

There are now being purchased 800 pairs of leather strap puttee leggings, which will be distributed for trial when delivered, and their utility considered. They cost $1.65 per pair, as compared with 66½ cents per pair for the canvas.

Identification tags.—By General Orders, No. 204, War Department, 1906, this Department is charged with the duty of providing for sale to officers and gratuitous issue to enlisted men, aluminum identification tags, the size of a silver half-dollar, of suitable thickness, to be suspended from the neck underneath the clothing by means of tape. Seventy-five thousand of these tags have been procured from the Ordnance Department at a cost of $750, and request for purchase of 50,000 additional has been made upon the Chief of Ordnance. Each tag is to be stamped with the name, rank, company, regiment, or corps, of the wearer, and steel dies for stamping the tags are furnished by the Ordnance Department to each organization commander.

Equipment of troops sent to Cuba.—On September 28, 1906, when it was apparent that the United States forces would embark for Cuba, clothing and equipage to equip the first expedition designated for service there, consisting of 380 officers and 5,220 men, was set aside at the depots of the Quartermaster's Department, and the officers in charge of depots instructed to be prepared to ship at once. On the 29th of September telegraphic instructions were given by this office to forward these supplies, as indicated below, to Newport News, Va., (from which point the troops would embark) and within twenty-four hours the stores were en route:

By fast freight from Philadelphia: 200 gallons neat's-foot oil; 2,714 D. B. flannel shirts; 3,497 pairs jean drawers; 2,975 chambray shirts; 5,220 O. D. blankets; 3,654 cotton undershirts; 775 mosquito bars; 2,600 barrack bags; 884 axes with helves; 884 ax helves; 884 hatchets with helves; 884 hatchet helves; 720 spades; 720 pickaxes with helves; 720 pickax helves; 720 camp kettles; 1,800 mess pans; 170 corn brooms; 100 scrubbing brushes; 40 hospital tents, complete, improved; 200 conical tents, complete; 250 wall tents, complete; 25 sets storage-tent poles; 2 storage tents; 5 storage-tent flies; 2,000 shelter-tent halves.

By express from New York: 4,825 mosquito bars; 1,500 pairs khaki breeches, mounted; 3,720 pairs khaki breeches, foot; 5,220 pairs leggings; 1,723 pairs jean drawers; 7,674 chambray shirts; 20 storage-tent flies; 3,000 tent pins, large.

By express from Boston: 1,566 cotton undershirts.

By express from Chicago: 5,220 khaki coats; 2,011 chambray shirts; 23 storage tents.

By express from Jeffersonville: 2,506 D. B. flannel shirts; 5,600 mosquito headnets.

By express from St. Louis: 3,000 chambray shirts.

In addition to the foregoing, other supplies have been promptly forwarded from time to time as called for.

Hospital and wall tents to be provided with asbestos rings.—It having been determined to substitute on all hospital and wall tents asbestos rings for the openings for stovepipe in place of rectangular metal ventilators, steps have been taken to provide all such tents now on hand, as well as those hereafter manufactured, with rings of asbestos.

It is believed that the loss of much valuable tentage heretofore accidentally destroyed or damaged from heated stovepipes coming in contact with the canvas will in the future be avoided.

Covert cloth to be superseded by kersey.—The lack of adaptability of covert cloth for overcoats and breeches was referred to in last year's report, and it was then stated that kersey would be substituted. In order to give it a neat appearance covert cloth requires a closer shearing in the process of finishing and this is at the expense of strength. The kersey weave will give better service, possessing greater strength and elasticity. The weights per linear yard, 6/4 wide, determined upon are 22 ounces for overcoat and 16 ounces for breeches cloth.

Tentage and equipage at depots and posts made a permanent record.—In order that the Quartermaster-General may be kept constantly advised of the tentage and other articles of equipage available to troops for field service, a permanent record has been established in this office of the supply of articles of tentage and equipage at each post throughout the country.

Chief quartermasters have been directed to obtain and forward to this office monthly a consolidated statement giving the above information and independent commands have also been called upon to render similar reports.

The data thus collected will be of the greatest value in case of emergency, facilitating the movement of troops and immediate supply of the requisite tentage for field service.

Improved marching shoes.—In consequence of reports received from the Army upon the adaptability of the regulation marching shoes (both orthopedic and standard lasts), the Quartermaster-General, with a view to rendering the shoes still more comfortable to wearers, caused samples to be made with the height slightly reduced, the tongue made of lighter and softer material, the instep measurements throughout increased, and with soft toe caps.

On February 18, 1907, specifications and standard samples of improved marching shoes were adopted, since which time shoes of this particular pattern have been purchased and issued whenever certain widths and sizes of the marching shoes heretofore procured were found to be exhausted.

It is believed that the continued efforts of the Quartermaster-General to perfect a shoe for marching purposes have been rewarded, and that the improved marching shoe will give general satisfaction throughout the Army.

On December 12, 1906, 1,000 orthopedic marching shoes, single sole, were shipped to the Philippine Islands for special issue and trial, reports to be rendered regarding their adaptability for service in those islands. Reports covering the trial of these have just been received from the commanding general, Philippines division, wherein he makes suggestions for slight changes and modifications. Most of them had already been embodied in the improved marching shoe and the others will be studied closely and adopted if found generally desirable.

Manufacture of khaki clothing in the Philippine Islands.—Owing to the heavy demands from the Army in the United States and from the militia for khaki clothing, and the inability of the contractors to supply sufficient material with the rapidity necessary to meet urgent demands, the Department, notwithstanding contracts were entered into with several firms for manufacturing the garments with utmost dispatch, found itself early in the season unable to fill requisitions with necessary promptness. The demands from the Philippine Islands, including the Philippine Scouts, were especially large.

With a view to alleviating this condition, authority was given in January last to the chief quartermaster, Philippines division, to purchase material and manufacture at Manila the khaki clothing required for use of the Philippine Scouts during the next fiscal year, consisting of 20,000 suits, at a total cost of $47,100.

In the early part of June, 1907, a requisition for the following additional: 3,350 khaki coats; 14,925 pairs khaki breeches, foot; 4,031 pairs khaki breeches, mounted, required for the regular troops, was received from the depot quartermaster at Manila.

As deliveries under existing contracts were not sufficiently rapid to enable the Department to fill requisitions from all sources, including Cuba, the chief quartermaster, Philippines division, was authorized to procure these garments by purchase or manufacture at Manila, at a total expenditure of $21,936.

Campaign and merit medals.—The campaign and merit medals are now being engraved at the United States mint at Philadelphia, Pa. The requisite ribbons are being delivered and with the boxes for the medals will be turned over to the mint, and all, when finally ready for distribution, will be delivered to those reported entitled to them as promptly as practicable.

Illegal sale of uniforms and clothing.—This office is pleased to note an increasing determination on the part of commanding officers to prevent the illegal traffic in articles of the uniform and clothing and to note several important convictions of flagrant offenders. It is hoped the zeal in this respect will not abate, and that the practice may finally be made so dangerous and disreputable as to be entirely stamped out. The opinion has heretofore been expressed that the Government should buy back from discharged men such uniform and clothing as they might have. It is believed this would assist toward making it harder for men to sell and more dangerous for unscrupulous dealers to buy. No defense could then be offered that the purchases were from discharged men.

ACCOUNTS.

There were in this office July 1, 1906, for examination and transmission to the Auditor for the War Department 32 accounts of disbursing quartermasters; received during the fiscal year 5,817, making a total of 5,849. Examined and transmitted to the Auditor 5,832, leaving 17 on hand June 30, 1907.

There were received during the same period 155 accounts of disbursing officers of the organized militia of the several States and Territories, examined and transmitted to the Auditor for the War Department (through division of requisitions and accounts) 153, leaving 2 on hand June 30, 1907.

The reduced number of accounts compared with the fiscal year 1906, when 7,270 were received, is due to consolidating on one account current the various appropriations instead of rendering separate accounts current as heretofore. This method went into effect for accounts rendered in the United States in October and for posts elsewhere in November, 1906. The number should be still further reduced during the next fiscal year.

PROPERTY RETURNS.

Of property returns there were 8 on hand awaiting examination July 1, 1906, and there were received from quartermasters during the fiscal year 1907, 2,301, a total of 2,309, of which 2,292 were examined, leaving but 17 on hand to be examined on June 30, 1907; 47 annual returns of militia officers were received and examined during the year. The number of letters written in connection with the work was 7,484, which shows a reduction of nearly 30 per cent from the 10,834 written during the fiscal year 1904, the last one prior to the inauguration of improvements in the manner of rendering these returns and handling them in this office. While the reduction of work will not for the future be so marked it is believed that even this good showing can and will be improved upon.

CLAIMS.

At the beginning of the fiscal year there were on hand awaiting action 162 miscellaneous claims and accounts, amounting to $38,264.29; there were received during the fiscal year 913 claims and accounts, amounting to $46,556.41. Final action was taken during the fiscal year on 921 claims and accounts, amounting in the aggregate

to $50,247.11, leaving on hand at the end of the fiscal year awaiting action 154 miscellaneous claims and accounts, amounting to $34,573.59.

Confederate horse claims.—The act approved February 27, 1902, authorized the Quartermaster-General to investigate, under such rules and regulations as the Secretary of War should approve, the claims of artillery and cavalry officers and private soldiers of the Confederate Army for horses, side arms, and baggage taken from them by Federal troops at and after the surrender at Appomattox, and to issue, subject to the approval of the Secretary of War, vouchers to such persons as were shown to be entitled to payment therefor, the act providing that the expenditures thereunder should not exceed $50,000. Additional appropriations, amounting to $315,000, were subsequently made to pay this class of claims, making total appropriations of $365,000 for this purpose. By the act of Congress, March 3, 1903, March 1, 1904, was fixed as the time limit for filing these claims, which time was extended by the act of April 27, 1904, to April 27, 1906.

There were received in this office to and including the last-mentioned date 2,899 of these claims, of which number 2,245 have been allowed, amounting in the aggregate to $299,076.45; 238 claims have been disallowed, and 1 filed under the act has been transmitted to the Court of Claims in response to a call from that court. The aggregate amount allowed in settlement of the 113 claims approved and authorized paid during the past fiscal year is $15,175.75. There remained at the close of the fiscal year awaiting action 415 claims, in each of which is required definite information and evidence to enable decision to be made as to its justness, under the regulations providing for settlements. There was an available balance of this appropriation on June 30, 1907, of $65,923.55, which it is considered will be sufficient to pay those on hand.

Claims under the act of July 4, 1864.—This act provided for examination by the Quartermaster-General of claims of citizens of States not in rebellion for quartermaster stores furnished to the Army of the United States, and if convinced that the claim is just and of the loyalty of the claimant, and that the stores have been actually received or taken for the use of and used by said Army, then to report each case to the Third Auditor of the Treasury, with a recommendation for settlement. The presentation of this class of claims was barred on January 1, 1880, under provisions of the act of Congress approved March 3, 1879.

Prior to January 1, 1880, there were received in this office 53,549 claims under the act of July 4, 1864, amounting, as stated, to $38,121,-356.63. All of these claims have been examined and finally acted upon except 81, which have been suspended for further evidence.

The act approved March 3, 1883, authorizes the Court of Claims to further investigate claims which have been disallowed by the Quartermaster-General and report the facts ascertained to Congress. During the past year the papers in 50 of these cases have been transmitted for use as evidence before the Court of Claims.

At the beginning of the fiscal year there were reported 249 claims of a miscellaneous character, including those for unliquidated damages and loss of private property due to army maneuvers and for damages to buildings due to heavy-gun practice at various artillery

posts on the coasts. These had all been investigated, the amounts justly due to each claimant ascertained, and an estimate submitted to Congress for funds to pay them. Additional claims were received in the early part of the fiscal year, and an additional estimate submitted to Congress for their payment, the total number and amount being 255 claims, aggregating $35,126.10.

Congress in the act making appropriations for the support of the Army for the fiscal year ending June 30, 1908, approved March 2, 1907, appropriated money for the payment of these claims, and on April 3, 1907, all the papers pertaining to them were transmitted to the Auditor for the War Department for settlement.

Additional claims of this nature were received during the fiscal year, for the payment of which an estimate has been submitted. The total amount required to pay those now awaiting action is $4,123.70.

Unliquidated damages.—Recommendation was made in the annual report for last year (p. 45) that the doctrine of unliquidated damages as applied to claims against the Government by present decisions be modified. That recommendation is renewed. Well-grounded claims for unavoidable damages due to heavy-gun fire at coast-artillery posts, in connection with maneuvers, operation of transports and other vessels, and various causes are constantly being presented, but may not legally be settled by executive officials. If officers or boards of officers could be empowered to settle such claims within a limited amount, it would lessen friction, expedite justice to claimants for small sums, who often need and deserve relief, and save much of the time and labor now consumed in reports and discussion. It is believed the Judge-Advocate-General, with the aid of the Department of Justice, if necessary, could draft a law which would give needed relief from this rule and at the same time amply guard the interests of the United States.

Newspapers and periodicals.—There were supplied to the various army posts in the United States and to troops serving in the island possessions and Alaska during the fiscal year newspapers and periodicals to the aggregate value of $5,071.48, which, however, does not include the cost for supply of newspapers to troops in the Philippine Islands, which were paid for from funds specially allotted for the military service in the Philippines.

NATIONAL CEMETERIES.

There are 83 national cemeteries, classified as follows: First class, 26; second class, 20; third class, 16; fourth class, 21. The number of interments therein to June 30, 1907, were: Known, 203,194; unknown, 152,171; total, 355,365, an increase during the year of 1,980, including the remains of 85 officers and enlisted men from abroad. The remains of 888 officers and enlisted men were removed from abandoned post cemeteries and other places within the United States to permanent post or national cemeteries. During the fiscal year 11,685 white marble headstones were furnished to mark the graves of Union soldiers, sailors, and marines buried in national, post, and other cemeteries.

There are 75 superintendents of national cemeteries authorized by law. During the fiscal year 3 died, 2 were discharged, and 5 appointed, leaving the full number on duty at close of the fiscal year.

There were also on duty 1 assistant superintendent on probation and 9 who have successfully completed their probationary service and are awaiting appointment as superintendents.

Burial of indigent soldiers.—Under the act of Congress making appropriation for the burial of soldiers "who die in the District of Columbia or its immediate vicinity," etc., claims aggregating $2,792.27 were paid during the fiscal year for the burial of 64 such persons.

Buildings and improvements.—At all the national cemeteries necessary repairs were made and the grounds, roads, walks, and drives kept in good condition. The most important construction has been a new frame lodge at Florence, S. C.; new brick lodges at Knoxville, Tenn., and Gettysburg, Pa., and minor construction at New Albany, Ind., Cold Harbor, Va., Battle Ground, D. C., Beverly, N. J., Stone River, Tenn., Fayetteville, Ark., Antietam Battlefield, Md., and other places.

At the Arlington, Va., National Cemetery the work of grading, draining, making roads, etc., in the new addition has been continued. A new brick stable was erected, heating system installed in the mansion, and fire protection system in the cemetery.

At Yorktown, Va., the site of the monument commemorating the surrender of Lord Cornwallis has been inclosed by an iron fence, the monument repaired, and the grounds improved.

Lands purchased or donated.—By authority of the act of July 12, 1906, donation was accepted of a tract of land near Greeneville, Tenn., known as Monument Hill, wherein lie the remains of Andrew Johnson, late President of the United States, to be established as a national cemetery of the fourth class.

By authority of the act of January 23, 1905, necessary land was purchased for extension of the national cemetery at Richmond, Va., the wall extended to inclose the addition, and the grounds put in shape.

Disinterring corps.—This corps is still maintained in the Philippine Islands for the disinterment and shipment to the United States—for reinterment in national cemeteries or for shipment home when claimed by relatives—of the remains of officers and enlisted men of the Army and Navy, and of civilian employees of the Army who die in those islands. Though the field to be covered by this corps is a very extensive one, remains are returned at the earliest possible date which the health regulations and climatic conditions of the islands permit.

More direct route to Arlington National Cemetery.—The Department is now engaged in extensively enlarging and beautifying this national cemetery, and is interested in having it made as directly accessible as possible for funeral processions and visitors to Washington, and also that the route be through inviting surroundings. At present approach to the cemetery from this city is circuitous, in many ways objectionable, through unattractive localities, and numbers of persons are deterred from visiting it on this account.

These reasons impelled the recommendation in the annual report for 1904, page 25, in favor of the construction of the Memorial Bridge across the Potomac which has been considered for several years. Attention is now invited to that recommendation and consideration of the interests of the Department and the convenience of visitors to the cemetery requested.

Road from the new highway bridge to Arlington.—With a view to securing a shorter, more convenient and attractive route to the

Arlington National Cemetery, the construction of a new road from the Virginia end of the bridge to the Government reservation has been considered, surveys made, and cost estimated. This route would avoid the long trip through Georgetown and across the Aqueduct Bridge, be shorter and more pleasant in every way, and its construction is recommended. For the construction of this road it will be necessary to purchase a right of way from the Virginia approach of the bridge to the Government reservation line, which would amount to about 4½ acres and cost, it is estimated, about $5,000. The cost of building the road is estimated at $39,000, a total cost of $44,000.

PERSONNEL.

The personnel of the Quartermaster's Department comprises 96 commissioned officers, as follows: One brigadier-general, 6 colonels, 9 lieutenant-colonels, 20 majors, and 60 captains; 200 post quartermaster sergeants, 200 enlisted men of the Army general service detachment, West Point, and a large number of civilian employees distributed throughout the United States, insular possessions, and Cuba.

During the fiscal year 2 officers retired, 4 were relieved by expiration of detail, 2 before expiration of detail on account of promotion, 1 at his own request, and 1 vacancy existed at the beginning of the fiscal year, making a total of 10 vacancies, all of which were filled by detail from the line, as provided by law.

In addition to the above regular force, there were on June 30, 1907, 48 officers of the line on duty in the Department, by detail as acting quartermasters, in charge of construction work at the various posts, under the direction of the Quartermaster-General of the Army; 6 by detail as acting quartermasters, assistants to depot quartermasters; 4 by detail as acting quartermasters, assistants to chief quartermasters; and 18 in charge of transports and other duties; making a total of 76 officers of the line detailed as acting quartermasters.

During the year 2 post quartermaster-sergeants died, 2 deserted, 6 retired, 1 was discharged by purchase, 4 by expiration of term of enlistment, and 1 on certificate of disability, making a total of 16 vacancies, which were filled by appointment of sergeants from the line.

INCREASE OF THE CORPS.

In his annual report for 1906, the Quartermaster-General renewed recommendations previously made for an increase of the corps both in commissioned officers and in post quartermaster-sergeants. Attention is invited to the discussion of these subjects in the annual reports for 1904, 1905, and 1906, which are yet pertinent, and which, in fact, are accentuated and the views expressed confirmed by the observation and experience of another year.

In the opening paragraphs of this report reference was made to what, to those unacquainted with its work, are the almost incomprehensibly wide range and varied nature of this Department's duties, and the vast territory over which they are performed, and to the number (76) of line officers detailed to its service. Last year the protests of division and department commanders against details of

line officers for staff duties were general, emphatic, and well grounded. Realizing this, effort was made to release line officers from duty with the Department wherever possible, and to avoid requesting new details, except where absolutely necessary. That the effort was without result is shown by the fact that 76 line officers were detailed on duties connected with this Department during the last fiscal year, compared with 77 for 1906 and 21 for 1905.

It is apparent, therefore, that the number of officers belonging to the Quartermaster's Department is not sufficient to perform the work connected therewith. The number of line officers now detailed is the minimum number which the duties imposed upon the Department by law and regulations makes imperatively necessary, in addition to the strength of the corps. Furthermore, the supervision of the work by trained officers is a material saving to the United States, and, moreover, the results obtained are far more satisfactory. This department can not perform the duties imposed upon it by law economically, efficiently, and satisfactorily without a substantial and permanent increase in the number of officers belonging thereto.

In performing the duties devolved upon the Quartermaster's Department it is essential that officers be informed in regard thereto. An officer's value to the Department is commensurate with his knowledge and experience of the work he is to perform. This knowledge can only be gained by careful, persistent, and painstaking study and effort. Attention in this respect is called to the following recommendation in 1904:

> The duties of a quartermaster are of such a nature and so great a scope as to constitute a profession in themselves, and, even after proper appointments have been made, can only be learned by close application and long experience; therefore, the longer an officer serves in the department the more efficient he becomes, and, consequently, the more valuable to the service in general. The necessity of efficient service in this Department and of affording it the fullest possible scope to secure and retain the talent most fitted for its conduct are too obvious to require argument, and it is not considered the present system is affording that opportunity.

The recommendation in 1905, renewed and urged in 1906, was as follows:

> As I stated in my last annual report, and would gladly emphasize, if possible, the duties of a quartermaster are of such a nature and so great a scope as to constitute a profession in themselves. In fact, in private life there are single branches of the duties devolving upon this Department which men take up and follow as their profession and to which they devote the work of their lives, as, for instance, construction work, transportation business, the manufacture of clothing and shoes, and a number of other examples might be cited. Even after proper appointments have been made a quartermaster's duties can only be learned by close application and long experience; therefore, the longer an officer serves in the Department the more efficient be becomes, and, consequently, the more valuable to the service in general. The necessity for efficient service in this Department and of affording it the fullest possible scope to secure and retain the talent most fitted for its conduct seems to me too obvious to require argument, and it is not considered that the present system is affording that opportunity.
>
> This is in commercial life an age of specialization, and the detail system, as applied to this Department needs these changes to make it conform to modern business methods, with which it must come in touch at all points.

INSTRUCTION FOR QUARTERMASTERS.

The present excellent courses of study at the Infantry and Cavalry School and Staff College at Fort Leavenworth undoubtedly offer a *very* valuable and fundamental training for officers for service in the

Quartermaster's Department. The course in engineering in the Infantry and Cavalry School and the practical exercises in performing staff duties involving the details of transportation of large bodies of troops obtained in the military art exercises in the Staff College furnish a superior foundation of instruction for officers for service in this department. There is, however, an urgent need for officers specially trained in the construction of buildings, of water, sewer, and electric-lighting systems, the installation of modern heating apparatus; in textiles and leather, and the processes of manufacture of clothing, hats, shoes, etc.; also in details of transportation by land and water. In addition, there should be general instruction in the administrative work of the department, and the preparation of papers pertaining thereto, especially contracts and bonds. It is hoped that some practical scheme may be devised for the selection and instruction at the service schools at Fort Leavenworth of a limited number of specially qualified officers with a view to their detail to fill vacancies in the Quartermaster's Department.

POST QUARTERMASTER-SERGEANTS.

No less urgent than the need for increase of the commissioned personnel is that for an increase in the number of post quartermaster-sergeants.

To become eligible for appointment to these positions an enlisted man must have at least four years' service, have reached the grade of sergeant, and pass a prescribed examination. These regulations insure competent and trustworthy men to perform the important and responsible duties devolving upon them. With very few exceptions the post quartermaster-sergeants have proven intelligent, efficient, and trustworthy. By their employment the cost of civilian clerical help is reduced; they are subject to army regulations and military discipline; have a clearly defined status in the military establishment, thus avoiding friction as to quarters, messing, etc., at isolated posts; and can be held to more certain accountability for trust and responsibility devolving upon them than can civliian employees.

Recommendation has heretofore been made for an increase of fifty in the number of these sergeants, the additional number to be designated as post quartermaster-sergeants of the first class, and have the same rank, pay, and allowances as hospital sergeants of the first class. One sergeant could be employed with advantage at nearly every post and station in the United States, of which there are now over 150; while at the most important posts, two, sometimes more, should be stationed, if the number were sufficient to allow it. More are also needed in the Philippines and Cuba than it is possible to spare for that service. The increased pay for 50 sergeants is advocated because the importance and responsibility of the duties on which they are engaged warrant it. This would also give opportunity to reward those who now or may hereafter deserve it, and the possibility of promotion would have a good effect upon the subordinate sergeants. The additional expense of the increased number of sergeants desired would be more apparent than real, as they would largely replace civilian employees, now costing the Government more than they would.

GENERAL-SERVICE CORPS.

This Department has long realized that could it have at command an enlisted force of sufficient numerical strength it could in many respects more efficiently and economically administer its affairs and maintain better discipline than is possible with civilian employees. The men of such a corps would occupy a certain and determined position in the Army; be without question subject to its laws and regulations, both as to their duties and their privileges; and the matter of selection, duties, quarters and rations furnished, separation from the service, etc., would be placed entirely upon a military basis. Nor is it believed serious difficulty would be encountered in selecting and enlisting competent and reliable men of the trades and callings required to form such a corps. It is well known that there are already to be found among the enlisted men of the Army skilled mechanics and artisans, whose abilities are largely utilized and for which considerable sums are annually allowed them as extra-duty pay. By transferring such men the nucleus of a most efficient corps could be formed, which there is little doubt could be so organized, developed, and distributed as in time to remove the necessity for any considerable number of civilian employees under normal conditions.

In time of war such a corps would be capable of expansion and its trained and skilled personnel be available for teaching new members their duties with the least possible delay. Most of the trouble heretofore experienced in securing qualified civilian employees in emergencies would be eliminated, especially where connected with transportation. Altogether, more efficient service would be secured for the outlay involved than is possible under the present practice. As an indication of what might be done in this respect the post quartermaster-sergeants are an instructive example. No better, more reliable, or competent body of men of like rank can be found, and their duties and responsibilities are by no means light. Recommendation for the establishment of such a corps, with outline for its organization, was made to the Secretary of War by my predecessor in a communication dated February 16, 1904; and in his annual report for 1904 it was renewed and the advantages of such an organization briefly discussed. Attention is invited to that discussion and also to the discussion of this subject by several department commanders in recent years, notably that of Brig. Gen. J. M. Lee, commanding the Department of Texas, for the fiscal year 1905.

In times of actual service there are certain civilian employees—for example, teamsters and packers—whose duties may and frequently do take them into the same positions of danger as troops, and to place all such on the same footing as enlisted men would be only fair to them, in addition to the advantages accruing to the service.

The establishment of such a corps for the Department would, this office is convinced, remedy a recognized weakness in our military system, result in an actual saving of funds, and increase the efficiency of the enlisted men of the line by leaving all of them absolutely free to attend to purely military duties. While the pay of its members would have to be, for nearly all grades, higher than privates receive, the advantages of quarters, allowances, and prospective retirement would allow marked reductions from the salaries now paid civilians. There

would also be eliminated much of the correspondence now necessary in making selections, transfers, separations, reporting the status, etc., of civilian employees in the classified service, effecting a saving in clerical work at posts and stations and in this office.

Since the adoption of the new rules for garrison and field training, practice marches and instruction camps, etc., little time is left enlisted men for extra duty. This condition has also increased the demand for civilian employees to perform many of the duties formerly done by enlisted men as extra duty. In the interests of efficiency, economy, discipline, and readiness for prompt action in emergency, this Department considers the establishment of a general-service corps one of the most urgent needs to be met, and it is hoped provision therefor will be made during the coming session of Congress along the line of the bill introduced in the last, with a possible modification so as to recognize post electricians, enginemen, and stokers.

EXTRA-DUTY PAY TO TROOPS ON FOREIGN SERVICE.

The act of March 2, 1901 (par. 12, G. O. 26, A. G. O., 1901) provides 20 per cent increase of pay for enlisted men on foreign service, but forbids extra-duty pay for them. This increase is understood to be on account of the additional expenses of men on such service, and in orders assigning troops to the Philippines, company commanders are instructed to make every proper effort to induce their men to make allotments of pay in favor of their dependent relatives, as provided in paragraph 1374 of Army Regulations. The trying nature of the tropical climates and discomforts of life there are also understood to have been among the reasons for the increase.

It therefore appears that the additional 20 per cent pertains only to an enlisted man's pay for military service, and extra duty is work different from and in addition to that service. Especially at remote stations much extra duty must be done by enlisted men in connection with construction, transportation, building roads, etc., such as would in the United States entitle them to extra-duty pay, and it is the opinion of this office that enlisted men performing extra duty in the foreign service are as well entitled to receive pay therefor as those in the United States, especially since all foreign service is now in the tropics, where labor must be performed under the hot sun of a most trying climate, and repeal of the law preventing it is therefore recommended.

RECOMMENDATIONS OF FORMER YEARS.

Such of these as have not been acted upon and adopted, either by law or regulations, are still considered pertinent and worth consideration. These are, with reference to payment of traveling expenses of officers on departmental duty, annual report for 1906, page 49; for 1905, page 44, and for 1904, page 25.

More experienced officers for battalion quartermasters, annual report for 1906, page 48, and for 1905, page 60.

It is not believed that the representations concerning these matters can be made more plain nor the recommendations made more specific, hence it is deemed sufficient to simply invite attention thereto and request their consideration.

CLERICAL FORCE.

In the annual reports of my predecessor for the past four years attention has been called to the insufficient strength of the clerical force of this office allowed by law to handle the vast amount of work devolving upon it.

In submitting the annual estimate for the fiscal year 1909 an increase in the number of clerks has been asked, as well as an increase in their salaries, and it is earnestly recommended that this estimate be favorably considered. Under existing law the clerical force consists of One chief clerk at $2,000; 11 clerks, class 4, at $1,800; 12 clerks, class 3, at $1,600; 26 clerks, class 2, at $1,400; 61 clerks, class 1, at $1,200; 28 clerks at $1,000; 15 clerks at $900; 10 clerks at $840; 1 clerk at $720; together with architects, draftsmen, engineers, inspectors, messengers, and laborers, making a total of 224.

As casualties occur from time to time by death, resignation, or transfer in the force, they are filled by promotion from the next lower grades to the vacancy created in the higher grade, and the vacancy in the lowest grade ($840 class) is filled by selection from lists of eligibles furnished by the Civil Service Commission.

The nature of the work is such as to require, as a rule, all new appointees in clerical positions to be qualified as stenographers and typewriters, and it has been difficult to obtain eligibles through the channels of the Civil Service Commission possessing these qualifications who are willing to accept positions offered at the salary provided, viz, $840 or $900 per annum, and in fact the Civil Service Commission informed the Secretary of War on May 7, 1907, that it had no eligibles upon the male stenographer and typewriter register who are available for certification at $840 per annum. It is therefore recommended that the salaries of the clerical force of this office be readjusted by the elimination of all grades below that of $1,000, and increasing the number in that grade correspondingly.

This change will, it is believed, enable the Civil Service Commission to certify a class of eligibles possessing the necessary qualifications to fill vacancies as they occur.

Revision of salaries. The investigation of salaries now in progress with a view to revision to produce uniformity and fit them to existing conditions is a move in the right direction. This office and the Department at large are both frequently losing valuable or experienced clerks and other employees through offers of better salaries, more opportunity for promotions, or other material advantages. These losses are sometimes to other departments and sometimes to commercial concerns. In either event the drafts are from among the more valuable class of employees. Resignations to accept commercial positions can not, of course, be prevented, while to refuse request for transfer where the applicant secures thereby better salary or other advantage would be ungracious.

The views of the Quartermaster-General upon the question of retiring superannuated employees have been given at length in reports for the two preceding years, and to those attention is invited.

Respectfully submitted

J. B. ALESHIRE,
Quartermaster-General U. S. Army.

THE SECRETARY OF WAR.

REPORT OF THE COMMISSARY-GENERAL.

REPORT OF THE COMMISSARY-GENERAL.

WAR DEPARTMENT,
OFFICE OF THE COMMISSARY-GENERAL,
Washington, D. C., October 7, 1907.

SIR: I have the honor to submit the following report of the operations of the Subsistence Department for the fiscal year ending June 30, 1907:

RESOURCES, DISBURSEMENTS, AND BALANCES.

The following statement exhibits the aggregate fiscal resources and disbursements of the Department and the balances at the close of the fiscal year 1907:

REPORT OF FINANCIAL TRANSACTIONS OF THE SUBSISTENCE DEPARTMENT DURING THE FISCAL YEAR ENDING JUNE 30, 1907.

Appropriation, subsistence of the Army, 1907.

Resources:	
Appropriation	$6,249,703.70
Receipts	2,851,938.09
	9,101,641.79
Disbursements	8,361,986.27
Balance	739,655.52
	9,101,641.79

RECEIPTS.

Sales to officers and enlisted men	$2,145,205.85
Sales to civilian employees	188,802.35
Sales to Bureaus and Departments of the Government	228,146.64
Sales to officers and enlisted men of organized militia	8,186.19
Sales at auction	3,348.86
Miscellaneous collections from and sales to various parties and individuals	38,345.14
Meals on transports	118,626.09
Reimbursement from Bureaus and Departments of the Government for supplies, and for meals (on transports) furnished	101,280.69
Reclamations and refundments on account of errors	9,756.88
Gains in cash	2,619.70
Transportation charges collected on sales	7,619.70
	2,851,938.09

DISBURSEMENTS.

Advertising	$2,672.35
Articles of the ration, including savings	5,137,332.05
Board wages to employees of stewards' departments while ashore	7,528.70

Commercial newspapers	$37.35
Commutation of fresh vegetables	4,331.78
Commutation of rations to—	
Cadets at the Military Academy, West Point, N. Y.	45,718.50
Enlisted men on furlough	75,671.03
Ordnance sergeants at posts not garrisoned	1,165.20
Enlisted men on duty where rations in kind can not be economically issued	110,192.59
Enlisted men traveling on detached duty and at rifle competition	51,206.20
Enlisted men in hospital detachment at Army and Navy General Hospital, Hot Springs, Ark	3,753.40
Enlisted men, applicants, and general prisoners sick in hospitals	263,329.83
Female nurses on duty at hospitals	8,837.40
Contingent expenses (repairing furniture, typewriters, etc.)	3,210.24
Extra-duty pay	30,576.93
Ice for troops and refrigeration of stores	106,486.99
Liquid coffee for troops traveling	15,657.72
Meals to applicants, recruits, and recruiting parties	185,399.61
Meal tickets for troops traveling	8,388.87
Printing	2,385.24
Salaries to civil employees of the Subsistence Department at posts and stations	243,375.03
Salaries to civil employees on transports	206,390.76
Stewards' stores	239,476.70
Stores for sales, including exceptional articles	1,543,269.56
Subsistence property	56,161.68
Telephone rental	1,837.72
Transfer to Quartermaster's Department on account of money collected for transportation	7,592.84
	8,361,986.27

BALANCES.

Amounts in Treasury to credit of Subsistence Department, June 30, 1907	$244,295.56
Amounts to credit of officers in depositories and in personal possession, June 30, 1907	495,359.96
	739,655.52

Appropriation, subsistence of the Army, 1906.

Resources:	
Balance June 30, 1906	$521,005.34
Receipts	56,320.44
	577,325.78
Disbursements	117,620.34
Balance	459,705.44
	577,325.78

RECEIPTS.

Reimbursements from Bureaus and Departments of the Government for supplies and meals (on transports) furnished	$54,389.42
Miscellaneous receipts, sales, reclamations, etc	1,931.02
	56,320.44

DISBURSEMENTS.

Advertising	$275.90
Articles of the ration, including savings	82,579.86
Board wages to employees of stewards' departments while ashore	75.00
Commercial newspapers	15.00
Commutation of rations to—	
Cadets at the Military Academy	4,048.20
Enlisted men on furlough	5,332.84

Commutation of rations to—	
Ordnance sergeants at posts not garrisoned	$12.00
Enlisted men on duty where rations in kind can not be economically issued	3,206.50
Enlisted men traveling on detached duty and at rifle competition	3.00
Contingent expenses	26.55
Extra-duty pay	15.75
Ice for troops and refrigeration of stores	463.95
Liquid coffee for troops traveling	244.31
Meals to applicants, recruits, and recruiting parties	1,173.75
Meal tickets for troops traveling	1,397.92
Printing	107.93
Salaries to civil employees of the Subsistence Department at posts and stations	147.22
Salaries to civil employees on transports	2,497.51
Stewards' stores	85.36
Stores for sales, including exceptional articles	14,766.67
Subsistence property	309.67
Telephone rental	107.50
Transferred to Quartermaster's Department on account of money collected for transportation	520.54
Dropped by officers on account of credit allowed	207.41
	117,620.34

BALANCES.

Amounts in Treasury to credit of Subsistence Department, June 30, 1907	$458,991.22
Amounts to credit of officers in depositories and in personal possession, June 30, 1907	714.22
	459.705.44

Appropriation, subsistence of the Army, 1905.

Resources:	
Balance, June 30, 1906	$1,457,001.64
Receipts	1,141.80
Total	1,458,143.44
Disbursements	2,048.24
Amount carried to surplus fund by Treasury Department June 29, 1907	1,456,095.20
Total	1,458,143.44

RECEIPTS.

Amounts collected from various sources by Treasury Department	$1,048.43
Reclamations, etc	93.37
Total	1,141.80

DISBURSEMENTS.

Settlements made by Treasury Department	$2,048.24

Appropriation for replacing military stores at San Francisco, 1906–7.

Resources:	
Appropriation	$523,614.00
Disbursements	288,594.59
Balance	[a] 235,019.41
Total	523,614.00

[a] Amounts in Treasury to credit of Subsistence Department, June 30, 1907.

DISBURSEMENTS.

Expenditures in replacing stores and property destroyed	$288,594.59

Appropriation for the relief of sufferers from earthquake, etc., on the Pacific coast.

Resources:	
Balance of allotments, June 30, 1906	$40,188.80
Settlements made by Treasury Department	760.80
Amount of allotment transferred by Secretary of War to Quartermaster's Department, June 30, 1907	14,354.68
Balance	[a] 25,073.32
Total	40,188.80

Appropriation, organized militia, 1907

Resources:	
Allotment of appropriation made by Secretary of War	$75,540.00
Disbursements	53,535.50
Balance	22,004.50
Total	75,540.00

DISBURSEMENTS.

Settlements made by Auditor on account of value of stores supplied organized militia from regular subsistence stores	$37,329.46
Amount of allotment transferred to Quartermaster's Department by Secretary of War	1,000.00
Expenditures for supplies, meals, etc., for organized militia by officers of Subsistence Department	15,206.04
Total	53,535.50

BALANCE.

Amounts to credit of officers in depositories and in personal possession June 30, 1907	$22,004.50

Appropriation, organized militia, 1905.

Resources:	
Balance allotment June 30, 1906	$3,095.52
Amount of allotment transferred by Secretary of War to Quartermaster's Department, June 30, 1907	3,095.52

THE UNITED STATES ARMY TRANSPORT SERVICE.

Statement of cost of operation of stewards' department.

DEBITS.

Salaries of civilian employees and board wages (including employees at office of subsistence superintendent engaged in work pertaining to the transport service)	$213,919.46
Cost of food furnished crews and passengers	377,392.56
Repairs of subsistence property	9.00
Losses due to deterioration	4,504.90
Total debit	595,825.92

[a] Amounts in Treasury to credit of Subsistence Department, June 30, 1907.

CREDITS.

Cash collections and meals	$118,626.09
Accounts paid and collectible on account of meals furnished Bureaus and Departments of the Government	12,047.86
Miscellaneous sales	1,425.90
Gains in stores	176.82
Credit given for additional cost of unusual expenditures in transport service on account of Cuban expedition	37,879.38
Total credit	170,156.05

SUMMATION.

Total debit	$595,825.92
Total credit	170,156.05
Net cost	425,669.87

STATEMENT OF SALES ON CREDIT.

Value of sales on credit to enlisted men	$27,733.88
Collections reported	20,687.30
Balance	7,046.58

HOSPITAL ISSUES.

Before General Orders 106, War Department, June 15, 1906, amending paragraph 1235, Army Regulations, as amended by paragraph 1, General Orders 71, War Department, May 15, 1905, had been received by a few transport commissaries, supplies were purchased in July, 1907, by them, and stores issued from stock on hand for enlisted men in hospital too sick to use the army ration, amounting in value to $163.72.

Like issues were made in fiscal year 1906 amounting to $155.11, but were not included in that report owing to the delay in the receipt of the accounts and returns at this office.

VALUE OF ISSUES TO INDIANS.

Moqui Indians at Fort Huachuca, Ariz	$27.02
Seminole-negro Indian at Fort Clark, Tex	57.50
Indians in Alaska (destitutes)	789.68
Apache Indians at Fort Sill, Okla	9,724.32
Ute Indians captured and in arrest	13,955.34
Total	24,553.86

VALUE OF ISSUES TO CIVIL EMPLOYEES.

Civil employees of Quartermaster, Subsistence, Medical departments, and the Engineer and the Signal Corps	$195,325.03

Like issues were made in fiscal year 1906 amounting to $254.45, but could not be included in that report owing to the delay in the receipt at this office of accounts and returns which pertained to the above issues.

VALUE OF MISCELLANEOUS ISSUES.

Military prisoners at posts	$91,694.19
American prisoners at Bilibid Prison, Manila, P. I.	153.68
Filipino military convicts at Bilibid prison, Manila, P. I.	645.59
Filipino insurgent prisoners captured and in arrest	722.22
Destitute civilians	740.33
Total	93,956.01

DISPOSITION OF PROCEEDS OF SALES OF SUBSISTENCE SUPPLIES.

The following is a detailed statement required by section 5 of the act of Congress of June 30, 1906, regarding disposition of proceeds of sales of subsistence supplies:

RECEIPTS.

Total amount of receipts during fiscal year 1907	$2,585,973.88

DISBURSEMENTS.

Articles of the ration	$988,279.88	
Articles for sales	220,568.82	
Property	6,120.99	
Ice	27,806.81	
Savings	471,159.60	
Commutation of rations	295,773.09	
Extra-duty pay	27,651.85	
Salaries and services	182,776.49	
Unexpended balance	365,836.35	
		2,585,973.88

LOSSES.

Debit.		Credit.	
Ordinary wastage	$18,802.77	Reclamations made from carriers and contractors	$5,395.00
Deterioration of stores	34,015.39	Receipts from sales at auction of deteriorated supplies	3,348.86
Shortage by certificate	279.03	Gains (account stores)	7,401.25
Theft	161.12		
Loss by carriers	2,410.77		
Property expended and worn out in Government service	10,835.96		
Total debit	66,505.04		
Total credit	16,145.11		
Net losses	50,359.93	Total credit	16,145.11

The losses above occurred in the following places:

United States	$25,242.42
Philippines	24,376.44
Alaska	4,688.48
Porto Rico	792.84
Hawaii	165.61
Cuba	6,734.35
Transports	4,504.90
Total	66,505.04

Losses not heretofore reported occurred in the previous fiscal year to the sum of $13,629.93. They were found in delayed returns and consequently could not be included in the annual report of that year.

POST COMMISSARY SERGEANTS.

The number of post commissary sergeants in the service during the fiscal year was as follows:

In service July 1, 1906		199
Appointed during the year		18
Total		217
Separations:		
Died	1	
Retired	14	
Discharged	2	
		17
In service on June 30, 1907		200

ACCOUNTS AND RETURNS.

The following statement shows the number of accounts current and returns of subsistence stores and property on hand June 30, 1906, received and examined to include June 30, 1907, and balance on hand at latter date:

	Accounts current.	Returns of stores.	Returns of property.	Total.
On hand June 30, 1906	49	159	17	225
Received during fiscal year 1907	4,293	2,698	740	7,731
Total	4,342	2,857	757	7,956
Examined during year	4,285	2,727	750	7,762
On hand June 30, 1907	57	130	7	194

The examination of the accounts required the verification of 97,779 vouchers, the returns of stores 49,938 vouchers, and the returns of property 3,570. In connection with the examinations 3,834 postal cards were used, 4,552 letters and 889 indorsements were written and recorded, 213 papers copied, and 373 days of time consumed on work not classified.

CLAIMS.

At the close of the last fiscal year there were no claims left over for examination. There were 440 claims received, 440 disposed of, and none remain on hand for investigation.

There were in this office a lot of books and documents relating to claims received and acted upon covering the period of the civil war. The settlement of these claims is, by virtue of section 236 of the Revised Statutes, in the hands of the Auditor for the War Department, to whom practically all communications are addressed, and those which come to this office are referred to him. These records constitute the only ones which the Government has of the claims, and it is necessary for the Auditor for the War Department in the investigation of a claim to find out whether the claim has been made, and if paid, by whom and when, so that he may verify this information with the vouchers on file in his office. This required the writing and indorsing of several thousand communications each year on the part of this office. It was considered that a great saving in clerical

labor would be made in this office and that of the Auditor's office if the records were transferred to his office, which is the natural repository for them. With the consent of the Secretary of the Treasury and the sanction of the Secretary of War, the records in question were duly turned over to the Auditor for the War Department on April 2, 1907.

CONTRACTS.

Contracts to the number of 982 were made for subsistence stores and for meals and lunches for recruiting parties, and applicants for enlistment while held under observation during the fiscal year 1907.

CERTIFICATES OF SERVICE AND NONINDEBTEDNESS.

Certificates of service as acting commissary were issued in duplicate to the number of 368 and certificates of nonindebtedness issued to the number of 871 during the fiscal year 1907.

CLERICAL FORCE.

This office has a lower percentage of high-grade clerks than any other bureau of the War Department. Clerks assigned to responsible and exacting positions, requiring exceptional qualifications, are not adequately compensated. In order to correct this in some slight measure, recommendation was made to add one clerk in each of the fourth, third, and second classes, and to decrease the force by two clerks in the $1,000 class and one clerk in the $900 class, the total number of clerks remaining the same.

An effort was made last year to correct in a slight degree this disparity in grading by dispensing with the services of two employees and using $320 of the $1,560 saved to the Government thereby to increase the number in the higher grades. The increase of the percentage in the higher grades can not be effected in this manner any further, for the reason that the work of the office will not admit of any further reduction. One vacancy which was being held open for the purpose had to be filled, owing to the condition of the work.

The total increase required to effect the changes recommended amounts to $1,900, whereas the amount saved the Government last year by the reduction of three employees netted $1,240, so that the net increase of $660 over the amount which was saved the Government at that time would put the Department on a more equitable basis as far as the clerical force is concerned.

PHILIPPINES DIVISION.

POINTS OF SUPPLY.

The larger portion of the supplies for the Philippines were furnished from the principal commercial centers in the United States, and were of standard quality—only an occasional complaint being received—and reached their destination in good condition.

STORES PURCHASED AT MANILA.

Among the stores purchased at Manila during the year were: Fresh beef, fresh mutton, issue flour, hard bread, hops, rice, fresh potatoes, fresh onions, teas, issue sugar, ice, apple butter, butter, cheese, cigars, clotheslines, crackers, ginger ale, currant jelly, condensed unsweetened milk, mushrooms, mustard, olive oil, olives, cayenne pepper, pickles, pineapples, raisins, table salt, cranberry sauce, Pears' glycerin soap, granulated sugar, assorted jams, effervescent water, exceptional articles, and steward's stores. Only such stores were purchased at Manila as could be obtained with advantage, and the sum of $1,251,903.75 was expended in such purchases.

FRESH MEAT.

Fresh beef and fresh mutton of first-rate quality were procured at reasonable prices from Australia, under contract for delivery at ship's side. The beef was furnished from solidly frozen hind quarters only at a cost of 6¾ cents per pound, and mutton at 7 cents per pound.

FRESH VEGETABLES.

Potatoes and onions were supplied by contract from the United States, Australia, China, and Japan. They were of good quality, but considerable loss occurred in the potatoes, while the onions kept well and the loss on them was less. The cost of potatoes for the year ranged from $1.60 to $2.386 per 100 pounds and the onions from $2.05 to $2.245 per 100 pounds.

FRESH FRUITS.

Troops in the islands want fresh fruits, and the purchasing commissary at San Francisco was directed to utilize all spare space in the cold-storage room of the army transports for caring for fresh fruits intended for sale to the troops in the Philippines.

RATIONS ISSUED.

There were 5,030,941 rations issued in the division during the year, but at a slight increase in cost per ration, owing to the rise in the price of food products.

LOSSES.

The losses in the Philippines amounted to $24,376.44. This is the smallest loss ever sustained in the islands during a single year, and from this total is to be deducted receipts from auction sales, reclamations, and gains, which would leave only a slight net loss. This state of affairs reflects credit on the administration of Col. A. L. Smith, assistant commissary-general, who was chief commissary for the first nine months of the fiscal year, and Col. E. E. Dravo, assistant commissary-general, who was the chief commissary for the remaining three months.

THE ARMY OF CUBAN PACIFICATION

On September 29, 1906, a force consisting of about 5,600 men was ordered dispatched to Cuba, the port of embarkation being Newport News, Va. The successful management of subsistence affairs

at the port of embarkation was due to the energy and good judgment of the base commissary. After debarkation of the troops, due to arduous and continuous work on the part of the chief and depot commissaries, the commands assigned to the various stations were fully and adequately supplied, and the reports indicate thorough satisfaction with the operations of the subsistence department in Cuba, for which credit is due to the chief and depot commissaries there and to the purchasing commissaries in this country for their care in selecting the stores.

Under instructions from the Secretary of War of December 13, 1906, an itemized account has been kept of all expenditures additional to those which would have been necessary if the force comprising the Army of Cuban Pacification had been stationed in this country. The amount of money so expended up to June 30, 1907, including the expense incident to the operation of the steward's department on the transports exclusively engaged in the supply of these troops, is $155,319.38.

ADOPTION OF STANDARD SPECIFICATIONS AND CONDITIONS.

Standard specifications and conditions for subsistence stores were adopted and embodied in a circular in February, 1907. These specifications and conditions are to govern in the purchase of all subsistence stores, except where it is shown that the interests of the Government demand different or additional specifications and conditions. Their adoption has resulted in securing simplicity and uniformity in the requirements and conditions for purchases at all stations of the Subsistence Department, effected an economy by doing away with frequent printing of circulars at the various stations—such printing being expensive on account of the many different forms to be set up and the small number of copies required at each station—and has also resulted in a saving of clerical work at all stations and in this office.

REDUCTION OF THE EMERGENCY RATION.

Congress, upon the recommendation of this office and the approval of the Secretary of War, passed a law on March 2, 1907, providing that thereafter the emergency rations prescribed for use on emergent occasions should, when issued, be furnished in addition to the regular ration. Recommendation was then made to reduce the weight of the emergency ration from 16 to 12 ounces, to slightly lighten the burden of the enlisted man, and at the same time afford a ration sufficient to maintain physical strength.

RATE OF COMMUTATION AT THE ARMY AND NAVY GENERAL HOSPITAL, HOT SPRINGS, ARK.

By virtue of Executive order dated March 1, 1907, the following amendments were made to the rules and regulations prescribed for the government of the Army and Navy General Hospital at Hot Springs, Ark.:

The ration of enlisted men of the Army on the active list while under treatment and the ration of the members of the nurse corps (female) while on duty in the hospital

shall be commuted at the rate of 30 cents per ration, to be paid to the surgeon in charge by the post commissary or such officer of the Subsistence Department as may be designated, conformably to the regulations governing the subsistence of patients and nurses at other army hospitals.

Since there is no issuing commissary at this post, and rations in kind can not in any case be economically issued, the ration of the enlisted men of the Army on duty at this hospital shall be commuted at the rate of 30 cents per ration, to be paid to the men by the commissary upon their individual receipts conformably to the regulations governing such payments in other army cases.

FIRELESS COOKING.

The Subsistence Department has experimented with numerous devices submitted by manufacturers in various cities throughout the United States, as well as with contrivances of similar character designed by officers of the Army. Manufacturers have in a number of instances prepared devices which are satisfactory in a small way and which appear to answer for domestic purposes, but up to the present time none of them have designed a fireless cooker satisfactory for the needs of such a number of men as the Subsistence Department must provide for. The kind of a cooker desired is one combining lightness in weight with stability of construction, and which will stand long travel over all sorts of roads and assure the perfection of the contents at the end of the journey; and each receptacle containing food must be absolutely air-tight, easily cleaned, and readily adjusted. A thoroughly practical design for the kettle for the fireless cooker has been adopted by the Department and arrangements made for the construction of a number of them by the Ordnance Department, the kettles to be completed by the latter part of September, when thorough field trials on an extended scale will be undertaken.

TRAINING SCHOOLS FOR BAKERS AND COOKS.

Most favorable reports continue to be received concerning the work of the training school for bakers and cooks at Fort Riley, Kans., and at the two branch schools established at Washington Barracks, D. C., and the Presidio of San Francisco, Cal., and as in the next fiscal year the Subsistence Department will have charge of the duty of supplying cooking apparatus and bake ovens in the field consideration has been given to the determination of the best method of providing fresh bread for troops in active service, and the officers in charge of the schools for bakers and cooks have submitted their recommendations in connection therewith, looking to the providing of a field bakery equipment for each regiment, to be formed into a bakery column when brigades and larger units are in active service. The establishment of these schools for bakers and cooks will, if such column is provided by our regulations and the army service corps is authorized, provide the means for recruiting the men required in the bakery column.

Since the establishment of the training schools for bakers and cooks at Fort Riley, Kans., Washington Barracks, D. C., and the Presidio of San Francisco, Cal., 178 bakers and 292 cooks have been graduated. Of this total 53 bakers and 115 cooks were graduated in 1907 and 125 bakers and 177 cooks during the previous years. The number graduated at the different schools was as follows:

At Fort Riley, Kans., 24 bakers and 55 cooks during the present year and 94 bakers and 107 cooks during the previous years.

At Washington Barracks, D. C., 4 bakers and 17 cooks during the present year and 12 bakers and 28 cooks during the previous years.

At Presidio of San Francisco, Cal., 25 bakers and 43 cooks during the present year and 19 bakers and 42 cooks during the previous years.

The total number of officers who have graduated from the school at Fort Riley, Kans., is 14.

RATIONS FOR OFFICERS AND CIVILIAN EMPLOYEES SERVING IN THE FIELD.

I renew my recommendation that officers and civilian employees serving in the field be allowed one ration each per day.

Authority of law is required to make these issues to officers, and it is hoped that the measure will meet the approval of the Secretary of War and be by him commended to the favorable consideration of Congress.

SERVICE CORPS.

I desire to most earnestly renew the recommendation contained in my last annual report with regard to the organization of a service corps. In 1898, and again last year, upon the dispatch of the troops to Cuba, the necessity and importance of having this service corps were clearly shown, and it is believed that no other organization could be provided which would so largely increase the efficiency of the service in time of war and tend to increase the contentment of the men in time of peace as the establishment of a service corps. A bill providing for the creation of this corps was introduced in the first session of the Fifty-ninth Congress, on January 30, 1906 (S. 3926), and it is most urgently recommended that this matter receive the favorable consideration of the Secretary of War and be recommended to Congress.

MILITIA.

1. EXPENSE OF ORGANIZED MILITIA IN JOINT ENCAMPMENT, MANEUVERS, AND FIELD INSTRUCTION WITH THE REGULAR ARMY.

The encampments of the organized militia with troops of the Regular Army were held in the Atlantic and Pacific divisions at the following camps: Mount Gretna, Pa.; Chickamauga Park, Georgia; Austin, Tex.; Fort Riley, Kans.; Fort D. A. Russell, Wyo.; American Lake, Washington; and Fort Benjamin Harrison, Ind. The militia were subsisted by the Subsistence Department while they were going to camp from their home rendezvous, while in camp, and while returning therefrom to their home rendezvous. The total amount allotted for the purpose was $75,540, and the amount actually expended was $52,363.75, and $1,000 transferred to appropriation transportation of the Army.

2. DISTRICT OF COLUMBIA MILITIA.

The Naval Battalion of the District of Columbia was by direction of the Secretary of War supplied rations to the value of $877.04 in September, 1906, under the provisions of the act of March 1, 1889.

3. BONDS OF MILITIA OFFICERS.

I desire to renew my recommendation of last year that provision of law may be obtained so that funds may be turned over to militia officers in encampment and field instruction of the organized militia, without requiring bonds of them, as is now done under section 3614 of the Revised Statutes in case of officers of the Regular Army.

DETAILS TO THE AGRICULTURAL DEPARTMENT.

During the past year the Department has availed itself of the arrangement made with the Secretary of Agriculture of having some of the officers take a course in the use of the microscope, the polariscope, and the study of such qualitative work as is essential to the performance of the duties of a purchasing officer.

PURCHASES FOR THE RED CROSS ASSOCIATION.

Upon the request of the American National Red Cross, and with the sanction of the Secretary of War, the Subsistence Department purchased relief supplies at San Francisco for the Red Cross in connection with the Chinese famine relief. All officers of the Department who were asked whether they would act as purchasing agents for the Red Cross promptly expressed their willingness to serve in such capacity. No purchases were made, however, except by Maj. C. R. Krauthoff, purchasing commissary, United States Army, at San Francisco, Cal. In connection with these purchases, the Bulletin of the American National Red Cross for April, 1907, contains the following:

> The American National Red Cross wishes to express its indebtedness and thanks * * * to Major Krauthoff for the prompt and highly satisfactory manner in which he has at all times carried out the wishes of the society while acting as its purchasing agent.

CHRISTIAN HERALD CHINA RELIEF FUND.

With the consent of the Secretary of War the Commissary-General, at the request of Dr. Louis Klopsch, editor of the Christian Herald, of New York, made purchases of supplies and inspections of same, through officers of the Subsistence Department, on account of the above-named fund, to the amount of $108,352.49, for shipment by the transport *Buford* to Chin-Kiang, China, for the relief of the famine sufferers there.

The account in detail is shown below:

RECEIPTS.

By check of Doctor Klopsch, April 1, 1907	$50,000.00
By check of Doctor Klopsch, April 4, 1907	60,000.00
By interest on above sum deposited in bank	9.20
Total	110,009.20

DISBURSEMENTS.

To amount disbursed for supplies by Lieut. Col. J. N. Allison, D. C. G...	$32,500.00
To amount disbursed for supplies by Maj. C. R. Krauthoff, commissary..	75,852.49
To amount transferred to Doctor Klopsch.....	1,656.71
Total.....	110,009.20

Dr. Louis Klopsch, the editor of the Christian Herald, who collected the fund, in a letter to the Commissary-General dated May 14, 1907, in referring to the services rendered by the Subsistence Department in connection with the fund, said:

The services which you and your Department rendered could not have been improved upon.

Respectfully submitted.

HENRY G. SHARPE,
Commissary-General.

The SECRETARY OF WAR.

REPORT OF THE SURGEON-GENERAL

REPORT OF THE SURGEON-GENERAL.

WAR DEPARTMENT,
OFFICE OF THE SURGEON-GENERAL,
Washington, July 24, 1907.

SIR: I have the honor to submit herewith a report upon the work of the Medical Department of the Army, beginning with a financial statement for the fiscal year ending June 30, 1907, and including a study of the health and sanitary conditions of the Army for the calendar year 1906.

FINANCIAL STATEMENT, 1907.[a] [b]

Medical and hospital department, 1907.

Appropriated by act approved June 12, 1906		$623,000.00
Refundments during the year (including transfer by disbursing officer from "Medical and hospital department, 1906," to adjust appropriations, $152.62)		171.91
Total to be accounted for		623,171.91
Disbursed during the year:[a]		
Expenses of medical supply depots	$760.14	
Medical supplies	384,631.90	
Medical attendance and medicines (except at recruiting stations)	14,910.42	
Medical expenses of recruiting (including medical attendance and medicines at recruiting stations)	8,378.68	
Pay of nurses	2,214.00	
Pay of other employees	138,949.01	
Washing of hospital linen	22,700.13	
Expressage	263.63	
Notary fees	48.48	
Gas and electricity for medical apparatus	71.32	
		572,927.71
Balances on hand June 30, 1907 (except Manila, May 31):[a]		
In United States Treasury and in transit thereto	9,588.06	
In hands of disbursing officers—		
New York City	20,431.65	
Washington, D. C.	1,548.73	
St. Louis, Mo.	6,493.51	
San Francisco, Cal.	2,243.98	
Havana, Cuba	765.57	
Manila, P. I. (May 31)[a]	9,172.70	
		50,244.20
Total accounted for		623,171.91

[a] Complete, except "Medical and hospital department, 1907," which includes disbursements at Manila, P. I., only to May 31, 1907, and gives the balance on hand at that station on that date, instead of on June 30.

[b] The disbursements in this statement include settlements with public creditors made by the accounting officers of the Treasury, and charged by them to these appropriations.

Medical and hospital department, 1906.

Balance on hand July 1, 1906, act of March 2, 1905		$120,635.33
Refundments on account of supplies transferred:		
To Isthmian Canal Commission	$18,006.57	
To Bureau of Immigration	648.55	
To Marine Corps	88.56	
To States and Territories for use of organized militia	117.94	
Refundment on account of supplies issued for the relief of sufferers from earthquake and conflagration on the Pacific coast	11,317.91	
Other refundments during the year	643.67	
		30,823.20
Total to be accounted for		151,458.53
Disbursed during the year:		
Expenses of medical supply depots	$285.57	
Medical supplies	132,875.63	
Medical attendance and medicines (except at recruiting stations)	2,342.43	
Medical expenses of recruiting (including medical attendance and medicines at recruiting stations)	834.55	
Pay of nurses	23.33	
Pay of other employees	2,233.20	
Washing of hospital linen	1,989.39	
Expressage	34.73	
Notary fees	.72	
Gas and electricity for medical apparatus	17.25	
		140,636.80
Transfer by disbursing officer to "Medical and hospital department, 1907," to adjust appropriations		152.62
Transfer by Treasury settlement to "Miscellaneous receipts," being proceeds of sale to St. Paul's Hospital, Manila, P. I., erroneously credited to this appropriation		3,917.18
Balances on hand June 30, 1907:		
In United States Treasury	$5,408.79	
In hands of disbursing officers—		
New York City	187.70	
St. Louis, Mo	1,155.44	
		6,751.93
Total accounted for		151,458.53

Medical and hospital department, 1905.

Balance on hand July 1, 1906, act of April 23, 1904		$516.34
Refundments during the year ($15 on account of erroneous payment for services, and $58.05, the amount of a disbursing officer's depositary balance, held to meet outstanding checks, which was covered into the appropriation upon settlement by the accounting officers with the owner of the checks, the latter having been lost)		73.05
Total to be accounted for		589.39
Disbursed during the year:		
Medical attendance, not at recruiting stations	$150.00	
Treasury settlement with owner of lost checks mentioned above (the payments represented by the checks having been classified heretofore)	58.05	
		208.05
Balance in United States Treasury June 30, 1907, for surplus fund [a]		381.34
Total accounted for		589.39

[a] At date of this compilation, July 16, 1907, the surplus-fund warrant for June 30, *1907, has not been* received for note in the Surgeon-General's Office.

Medical and hospital department, certified claims.

Appropriated by act approved March 4, 1907	$301.47
Disbursed during the year	301.47

Report of army board on origin and spread of typhoid fever, 1903–4.

Balance on hand July 1, 1906, act of March 3, 1903	$546.56
Balance in United States Treasury June 30, 1907, for surplus fund [a]	546.56

Judgments, Court of Claims (War).

Appropriated by act approved June 30, 1906, on account of claims arising under the Medical Department of the Army	$242.00
Disbursed during the year	242.00

Replacing medical supplies, 1907–8 (act June 12, 1906—34 Stat. L., 256).

Amounts accruing to this fund:		
A. On account of supplies transferred—		
To Bureau of Immigration	$709.51	
To Bureau of Forestry	85.00	
To Bureau of Education	6.50	
To Navy and Marine Corps	1,574.22	
To Quartermaster's Department, U. S. Army	31.82	
To Engineer Department, U. S. Army	49.92	
To Isthmian Canal Commission	21,862.99	
To post exchanges	35.00	
To States and Territories for use of organized militia	24,951.14	
		$49,306.10
B. On account of supplies sold—		
To States and Territories for use of organized militia	$357.38	
To civil government of the Philippine Islands	176.83	
To civilian employees and civilians	1,731.11	
		2,265.32
C. On account of supplies issued for relief of sufferers from earthquake and conflagration on the Pacific coast		200.10
D. On account of collections from carriers and others for medical property lost or destroyed		310.89
Total to be accounted for		52,082.41
Disbursed during the year		2,363.76
Treasury settlement reimbursing State for supplies returned		80.00
Transferred by Treasury settlement to adjust appropriations		2.60
Balances on hand June 30, 1907:		
In United States Treasury	$46,999.81	
In hands of disbursing officer, Washington, D. C.	2,636.24	
		49,636.05
Total accounted for		52,082.41

Replacing military stores destroyed at San Francisco, Cal., 1906–7.

Appropriated (for medical and hospital supplies) by act approved June 30, 1906		$100,000.00
Disbursed during the year:		
For medical supplies purchased during the fiscal year 1906	$49,966.87	
For medical supplies purchased during the fiscal year 1907	50,033.13	
		100,000.00

[a] At date of this compilation, July 16, 1907, the surplus-fund warrant for June 30, 1907, has not been received for note in the Surgeon-General's Office.

Artificial limbs, 1907.

Appropriated by act approved June 30, 1906		$145,000.00
Disbursed during the year		129,670.48
Balances on hand June 30, 1907:		
In United States Treasury	$4,466.52	
In hands of disbursing officer, Washington, D. C	10,863.00	
		15,329.52

Artificial limbs, 1906.

Balance on hand July 1, 1906, act of March 3, 1905	$27,033.17
Disbursed during the year	8,615.65
Balance in United States Treasury June 30, 1907	18,417.52

Artificial limbs, 1905.

Balance on hand July 1, 1906, act of April 28, 1904	$8,492.91
Disbursed during the year	497.84
Balance in United States Treasury June 30, 1907, for surplus fund [a]	7,995.07

Artificial limbs, certified claims.

Appropriated by act approved June 30, 1906	$50.00
Appropriated by act approved March 4, 1907	.70
Total to be accounted for	50.70
Disbursed during the year	50.70

Appliances for disabled soldiers, 1907.

Appropriated by act approved June 30, 1906		$2,000.00
Disbursed during the year		1,169.79
Balances on hand June 30, 1907:		
In United States Treasury	$500.00	
In hands of disbursing officer, Washington, D. C	330.21	
		830.21

Appliances for disabled soldiers, 1906.

Balance on hand July 1, 1906, act of March 3, 1905	$743 31
Disbursed during the year	110.25
Balance in United States Treasury June 30, 1907	633.06

Appliances for disabled soldiers, 1905.

Balance on hand July 1, 1906, act of April 28, 1904	$757.60
Balance in United States Treasury June 30, 1907, for surplus fund [a]	757.60

Army Medical Museum, 1907.

Appropriated by act approved June 12, 1906		$4,000.00
Disbursed during the year		2,210.35
Balances on hand June 30, 1907:		
In United States Treasury	$1,500.00	
In hands of disbursing officer, Washington, D. C	289.65	
		1,789.65

Army Medical Museum, 1906.

Balance on hand July 1, 1906, act of March 2, 1905	$907.26
Disbursed during the year	873.67
Balance in United States Treasury June 30, 1907	33.59

[a] At date of this compilation, July 16, 1907, the surplus fund warrant for June 30, 1907, has not been received for note in the Surgeon-General's Office.

Army Medical Museum, 1905.

Balance on hand July 1, 1906, act of April 23, 1904		$281.34
Balance in United States Treasury June 30, 1907, for surplus fund[a]		281.34

Library, Surgeon-General's Office, 1907.

Appropriated by act approved June 12, 1906		$10,000.00
Disbursed during the year		6,732.45
Balances on hand June 30, 1907:		
In United States Treasury	$2,000.00	
In hands of disbursing officer, Washington, D. C	1,267.55	
		3,267.55

Library, Surgeon-General's Office, 1906.

Balance on hand July 1, 1906, act of March 2, 1905	$3,403.71
Refundment during the year	.74
Total to be accounted for	3,404.45
Disbursed during the year	3,049.16
Balance in United States Treasury June 30, 1907	355.29
Total accounted for	3,404.45

Library, Surgeon-General's Office, 1905.

Balance on hand July 1, 1906, act of April 23, 1904	$324.19
Disbursed during the year	6.50
Balance in United States Treasury June 30, 1907, for surplus fund[a]	317.69

Furnishing trusses to disabled soldiers (secs. 1176, 1177, and 1178, R. S., and act of Mar. 3, 1879).

Balance on hand July 1, 1906	$1,741.53
Drawn during the year[b]	4,000.00
Total to be accounted for	5,741.53
Disbursed during the year	4,648.46
Balance June 30, 1907, in hands of disbursing officer, Washington, D. C	1,093.07
Total accounted for	5,741.53

Relief of sufferers from earthquake and conflagration on the Pacific coast (joint resolutions of Apr. 19, 21, and 24, 1906.)

Balance on hand July 1, 1906, of allotments to the Medical Department made by the Secretary of War	$100,000.00
Disbursed during the year	11,518.01
Dropped from books of the Surgeon-General's Office to close account by transfer to the general account on the books of the office of the Secretary of War	88,481.99
Total accounted for	100,000.00

[a] At date of this compilation, July 16, 1907, the surplus-fund warrant for June 30, 1907, has not been received for note in the Surgeon-General's Office.

[b] Appropriation warrant not yet received in Surgeon-General's Office this date, July 16, 1907.

THE ARMY.

Troops were stationed in the United States proper, the Philippine Islands, Alaska, Cuba, and Hawaii during the past year, while native troops served in Porto Rico and the Philippines.

Statistics for the native troops—Porto Rican and Filipino—have been separately compiled, and when reference is made to the "Army" in this report the American Army proper, white and colored troops, is meant.

As in many diseases, notably the venereal and malarial, the same soldier is often admitted several times on account of the same case of illness, the total number of admissions is necessarily considerably greater than the actual number of cases. The extent of this discrepancy is about 5.75 per cent.

HEALTH OF THE ARMY.

The mean enlisted strength of the Army, American troops, white and colored, for the year 1906, as reported on the monthly sick reports of the medical department, was 56,443, and on the returns to The Adjutant-General's office 58,572. The former represents the strength of the commands from which the sick returns were made and was used in calculating all ratios except those for deaths and discharges. As all deaths and discharges were reported, even of those absent from a command, the total strength as obtained from The Adjutant-General was used in calculating ratios pertaining to those headings.

The total number of admissions to sick report was 72,071, equal to an admission rate of 1,276.88, compared with 1,295.97 for the previous year and 1,833.11 for the septennial period 1898 to 1904.

There were 358 deaths from all causes, equivalent to a rate of 6.11 per 1,000 of strength, compared with 6.28 and 14.62 per 1,000, the corresponding rates for the previous year and the period from 1898 to 1904, respectively. The death rate for disease, 3.28, is the lowest attained since the occupation of tropical countries, and compares favorably with the rates prior to 1898.

For disability there were 1,523 men discharged, equal to a rate of 26 per 1,000 of strength, compared with 25 per 1,000 for the preceding year and 22.81 for the septennial period 1898 to 1904.

The constantly noneffective rate of 49.79 for the year was a slight increase compared with 48.93, the noneffective rate for the preceding year.

Venereal diseases were again by far the most important factor affecting the efficiency of the Army during the year. These diseases had the high admission and noneffective rates of 190.44 and 13.09, respectively, compared with 200.34 and 12.47, the corresponding rates for the previous year. The discharge rate, 3.06 against 3.41, was slightly less than during 1905, but the constantly noneffective rate was increased from 12.47 in 1905 to 13.09 during the past year. There were constantly on sick report for this class of diseases 739 men, equal to the loss for the entire year of the service of about 11 full companies of infantry.

After venereal diseases in order of admission were malarial fevers, the rates for which were materially increased compared with those for the previous year. The rates for admission and noneffectiveness rose from 88.85 and 1.85 per 1,000 in 1905 to 107.67 and 2.30, respec-

tively, for 1906; the discharge and death rates remained practically the same as for the preceding year.

Next in order of importance were the diarrheal affections, the admission rate for which was 101.66 per 1,000 compared with 84.67 for the previous year; the noneffective rate for this class of diseases, however, was less than for 1905. Bronchitis, with an admission rate of 42.05 for the year, showed an improvement compared with the rate for the previous year. While the rate of admission for alcoholism of 31.22 per 1,000 was slightly in excess of the corresponding rate for the preceding year, the death rate from that cause was but a third of the mortality rate recorded in 1905. The noneffective rate compares favorably with that for the previous year.

As a cause of death tuberculosis again led, with a rate of 0.77 per 1,000, compared with 0.68, the corresponding rate for 1905. Typhoid fever was second. The mortality from this disease, however, showed to advantage compared with the two preceding years, the respective rates being 0.26, 0.29, and 0.33 per 1,000. Pneumonia, with a death rate of 0.24, showed a decided improvement, as the rate for the previous year was 0.32. The mortality rate for diarrheal diseases was not quite half as great as for 1905, the rates being 0.09 and 0.20, respectively.

Tuberculosis led as the cause of discharge for disability, with a rate of 3.11 for the year per 1,000 of strength of the army; venereal disease was second, with a rate of 3.06; defects of vision third, with a rate of 2.44, and organic disease of the heart fourth, with a rate of 1.35.

There were 229 admissions for gunshot wounds, with 65 deaths, and 2,953 admissions for wounds other than gunshot, with 12 deaths. Twenty-one enlisted men were killed in action and 78 wounded, of whom 5 died as a result of their wounds and 1 committed suicide. Of the killed 16 were by gunshot and 5 by bolo. There were 38 deaths from drowning, 10.6 per cent of the total deaths from all causes, a slight increase compared with the proportion of last year.

Thirty-nine suicides and 9 homicides were recorded during the year, compared with 31 and 20, respectively, the corresponding figures for 1905. There were 3 admissions for snake bite in the year 1906, with no fatal result.

This year for the first time all deaths and discharges which occurred in the United States, of soldiers invalided home from foreign service and whose organizations remained abroad were charged to the country from which the soldiers were invalided. Even this step toward greater accuracy of statistics by countries leaves a large number of deaths and discharges which can only be assigned to the United States, though the diseases which led to these terminations were contracted on foreign service.

Alaska as usual had the lowest admission and constantly noneffective rates, and, next to Cuba, the lowest discharge and total loss rates.

The discharge, death, total loss, and, next to Alaska, the constant noneffective rates, were lower in Cuba than any other country where American troops were serving.

The United States proper had the highest discharge rate, but, next to Cuba, the lowest death rate, and the lowest death rate for disease which has been heretofore recorded.

The Philippine Islands had as usual the highest admission, death, and constantly noneffective rates, and all the rates were a little higher than for 1905.

The rates for Hawaii were not as good as for last year.

OFFICERS.[a]

The mean strength of officers was 3,413, as obtained from the returns of the Medical Department, and 3,710 from The Adjutant-General.

There were 2,373 admissions, 18 deaths, and 116.67 constantly noneffective from all causes, equal to ratios of 695.28, 4.85, and 34.18, respectively, compared with 621.40, 6.15, and 29.38, the corresponding rates for the preceding year, and 665.30, 7.08, and 31.25 for the year 1904.

The admission and noneffective rates for the past year were slightly higher than for 1905, but the death rate showed a material improvement.

For disease the highest admission rates were as follows: Diarrhea and enteritis, 63.28; malaria, 62.12; bronchitis, 34.28, and influenza, 24.90. The highest death rates were caused by pneumonia, 1.08; cancer, 0.54; chronic nephritis, 0.27, and organic heart disease, 0.27; and the highest noneffective rates by tuberculosis, 3.12; dysentery, 2.08; diarrhea and enteritis, 1.42, and malaria, 1.33. There were 5 deaths from wounds and 1 from drowning.

INFLUENCE OF ARM OF SERVICE.

In these comparisons the ordnance department has been omitted, owing to their small number and the special character of their services.

The admission rate was highest in the field artillery and lowest in the hospital corps, while the death rate was highest in the infantry and lowest in the engineers.

By special diseases the infantry had the highest rates for venereal affections and the hospital corps the lowest; the coast artillery had the highest rate for alcoholism and the lowest for dysentery and typhoid fever; the field artillery had the lowest rate for alcoholism and the highest for malaria; the engineers had the highest rate for typhoid fever; the hospital corps the highest for dysentery and tuberculosis; and the engineers the lowest for tuberculosis.

The infantry had 15 men killed in action and 75 wounded, giving ratios of 0.65 and 3.37 per 1,000, respectively; 4 of the wounded died as a result of their wounds. The cavalry had 5 killed and 1 wounded, ratios 0.43 and 0.09, and the hospital corps 1 killed and 2 wounded, 1 of whom died from the effects of his wound.

COMPARISON WITH FOREIGN ARMIES.

A comparison is made of all the data available from the annexes of the annual reports of the medical departments of the respective countries containing the international tables agreed upon. Unfortunately the figures are not really comparable. In the United

[a] American officers of Philippine Scouts and the Porto Rican regiment are included the statement.

States the admissions include all soldiers who are excused from any part of their military duties, while this is not the case in any other country. The recruiting conditions vary greatly in each country; the United States and Great Britain rely on voluntary enlistment, while the other countries have conscription; Germany has a much larger number of men to select from than France, and there are other differences of equal importance.

The strength is differently estimated in different countries. Some have a low death rate because their sick are promptly discharged or retired and die out of service instead of on sick report.

That portion of the army serving outside the geographical limits of the United States has been omitted this year, as the figures shown by other armies, except Great Britain, appear to be for troops on home service only.

It will be noted that the highest admission rate, 1,321, was attained in the Dutch army; the next highest in the American army, 1,179.93, and the lowest, 348, in the Russian army.

The highest death rate, 5.61, was recorded in the British army, the American army having the next highest rate, 5.28, and the Prussian army the lowest, 1.86.

The figures for total loss, the combined rates for deaths and discharges, form one of the best bases for comparison; according to this standard American troops rank fourth, after those of Belgium, Russia, and Great Britain, but far ahead of all others.

Another factor of importance in judging of the relative healthfulness of different armies is the average duration of each case of sickness; from this standpoint the American army excelled all others except the Prussian, Bavarian, and Dutch armies. The average duration of each case in the American army was about one-half that of the Russian army and a little more than half that of the British army.

With regard to special diseases the admission rates in the American army were better than in most other armies in the following instances: Pleurisy, pneumonia, scarlatina, sunstroke, erysipelas, and epidemic cerebro-spinal meningitis; they were much higher than in any other army in the following: alcoholism, gonorrhea, influenza, mumps, and syphilis (British army excepted). Some of the diseases in which the rates were better in the American army than in the Russian army were diphtheria, erysipelas, malaria, pleurisy, pneumonia, scarlatina, trachoma, and variola.

The admission rate for dysentery in the British army was less than that of the American army, but the former had a death rate of 0.16 per 1,000, while there was no death from that cause in the latter. The death rates for malaria were also greater in the British, Dutch, Russian, Spanish, and Belgian armies than in the American army, although the corresponding admission rates were much lower.

KILLED AND WOUNDED IN ACTION.

Twenty-one enlisted men were killed in action and 78 wounded, of whom 5 died as a result of their wounds and 1 committed suicide. Of the killed, 16 were by gunshot and 5 by bolo. The 3 officers wounded by gunshot were returned to duty; 1 officer lost vision of the left eye by being wounded with a piece of rock while in action.

SURGICAL OPERATIONS.

Although the total number of operations, 3,189, is greater than that of last year, the number of unsuccessful operations and deaths is considerably less. Of the 28 deaths 7 followed 183 operations for appendicitis, 4 were the result of gunshot wound of abdomen with perforation of intestine, and 3 followed 16 operations for abscess of the liver. There was 1 fatality from anesthesia. Spinal anesthesia was used in 73 cases with no bad result. Out of 192 operations for hernia there were 3 failures and 1 death, the latter due to accidental wounding of the urinary bladder.

RECRUITING.

The plan adopted in the army September 30, 1905, discontinuing the employment of civilian physicians as examiners of recruits, was further amended in July, 1906, so as to discontinue all enlistments and reenlistments (except the reenlistment of members of recruiting parties) at general recruiting stations, and to require that such enlistments should only be made at depots and depot posts after examination by a medical officer of the Army. This has been efficiently carried out during the past year, and the highly satisfactory results obtained demonstrate its many advantages to the service over the old system of recruiting. From a physical standpoint no complaint of the unsatisfactory character of assigned recruits has reached this office during the year.

After a brief trial of the amended recruiting regulations regarding the requirement of six serviceable molars, it was found that quite a number of otherwise physically qualified, desirable candidates for enlistment were being lost to the service on account of defective teeth, and it was deemed advisable to modify the order to read that unless an applicant has at least four serviceable double (bicuspid or molar) teeth, two above and two below, and so opposing as to serve the purpose of mastication, he should be rejected.

The figures in these tables include all recruits examined physically up to July 31, 1906, but do not include applicants for enlistment rejected at general recruiting stations from August 1 to December 31, 1906. The number of rejections on primary examination reported to this office January 1 to July 31 was 4,953, while from August to December it was only 672.

The first table shows the number of applicants for enlistment, white and colored, examined physically during the year 1906, with the number accepted, rejected on primary examination, rejected at depots before assignment, and the number who declined enlistment, with ratios per thousand:

TABLE A.

	White.		Colored.		Total.	
	Number.	Ratio.	Number.	Ratio.	Number.	Ratio.
Examined	24,259	1,000.00	763	1,000.00	25,022	1,000.00
Accepted [a]	17,085	704.27	585	766.71	17,670	706.18
By first enlistment	10,746	442.97	168	220.18	10,914	436.18
By all other enlistments	6,339	261.30	417	546.53	6,756	270.00
Rejected on primary examination	5,484	226.06	141	184.80	5,625	224.80
Rejected on secondary examination [a]	382	15.75	1	1.31	383	15.31
Declined	1,690	69.67	37	48.49	1,727	69.02

[a] Three hundred and eighty-three accepted recruits were rejected at depots before assignment and discharged for disabilities existing before enlistment.

The proportion of finally accepted recruits was slightly in excess of that for last year in both white and colored candidates.

Table B shows the nativity of the accepted applicants for enlistment for the year. The proportion of foreign-born white recruits was slightly smaller than for 1905, 139.71 as against 146.12 per 1,000. The relative number from different foreign countries was about as usual.

TABLE B.

Country.	White.		Colored.		Total.	
	Number.	Ratio.	Number.	Ratio.	Number.	Ratio.
United States	14,698	860.29	585	1,000.00	15,283	864.91
Germany	557	32.60	.....	.....	557	31.52
Ireland	486	28.45	.....	.....	486	27.50
England	271	15.86	.....	.....	271	15.34
Canada	201	11.76	.....	.....	201	11.38
Russia	186	10.89	.....	.....	186	10.53
Scandinavia	177	10.36	.....	.....	177	10.02
Austria	176	10.30	.....	.....	176	9.96
Scotland	67	3.92	.....	.....	67	3.79
Denmark	57	3.34	.....	.....	57	3.22
Italy	48	2.81	.....	.....	48	2.72
Switzerland	44	2.58	.....	.....	44	2.49
Hungary	37	2.17	.....	.....	37	2.09
Holland	24	1.40	.....	.....	24	1.36
France	17	.99	.....	.....	17	.96
Cuba	4	.23	.....	.....	4	.23
Spain	3	.18	.....	.....	3	.17
Others	32	1.87	.....	.....	32	1.81
Total foreign	2,387	139.71	.....	.....	2,387	135.09
Grand total	17,085	1,000.00	585	1,000.00	17,670	1,000.00

Forty-three and twenty-six hundredths per cent of the white recruits were 5 feet 8 inches or over and only 1.42 per cent under 5 feet 4 inches, compared with 49.05 and 0.60 per cent for the previous year, and 43.76 and 2.22 per cent, the corresponding figures for colored troops for 1906.

Fifty-six and fifty-four one-hundredths per cent of the white recruits weighed 140 pounds or over, while 1.77 per cent weighed less than 120 pounds; the corresponding figures for colored recruits were 66.83 and 1.70 per cent, showing that colored recruits were heavier than white accepted applicants of the same age.

The chest measurement of 42.15 per cent of white recruits was 34 inches and upward, while 2.92 per cent were 30 inches and under; the corresponding figures for colored recruits were 51.79 and 2.05 per cent, respectively, the colored candidates again showing to advantage.

The following table shows the causes of rejections among white and colored candidates examined for enlistment during the year 1906, with ratios per 1,000 rejected:

Cause of rejection.	Total.				White.				Colored.			
	Total.	Ratio per 1,000 examined.	Rejected on primary examination.	Rejected on secondary examination.	Total.	Ratio per 1,000 examined.	Rejected on primary examination.	Rejected on secondary examination.	Total.	Ratio per 1,000 examined.	Rejected on primary examination.	Rejected on secondary examination.
1. Defects of vision	778	129.50	716	62	769	131.09	707	62	9	63.38	9	.....
2. Underweight	601	100.03	594	7	587	100.07	580	7	14	98.59	14	.....
3. Defective teeth	470	78.23	417	53	467	79.60	415	52	3	21.14	2	1
4. Venereal diseases	463	77.06	438	25	441	75.18	416	25	22	154.93	22	.....
5. Hernia	261	43.44	239	22	252	42.96	230	22	9	63.38	9	.....
6. Heart disease	220	36.62	185	35	214	36.48	179	35	6	42.25	1	.....
7. Varicocele	202	33.62	201	1	201	34.26	200	1	1	7.04	1	.....
8. Hemorrhoids	184	30.63	181	3	183	31.20	180	3	1	7.04	1	.....
9. Defects of hearing	183	30.46	142	41	183	31.20	142	41	.....	.....	.....	.....
10. Underheight	151	25.13	151	.....	150	25.57	150	.....	1	7.04	1	.....
11. Diseases of the organs of locomotion except spinal curvature	142	23.64	131	11	137	23.35	126	11	5	35.21	5	.....
12. Defects of development except as shown in detail	131	21.80	124	7	129	21.99	122	7	2	14.09	2	.....
13. Varicose veins	128	21.31	126	2	126	21.48	124	2	2	14.09	2	.....
14. Curvature of spine	115	19.14	115	.....	111	18.92	111	.....	4	28.17	4	.....
15. Flat feet	114	18.97	110	4	110	18.75	106	4	4	28.17	4	.....
16. Diseases of the skin	110	18.31	110	.....	109	18.58	109	.....	1	7.04	1	.....
17. Chest development insufficient	110	18.31	106	4	108	18.41	104	4	2	14.09	2	.....
18. Injuries	102	16.98	95	7	101	17.22	94	7	1	7.04	1	.....
19. Diseases of the genito-urinary system (nonvenereal)	86	14.30	81	5	86	14.66	81	5	.....	.....	.....	.....
20. Diseases of the eye except defective vision	80	13.32	51	29	80	13.64	51	29	.....	.....	.....	.....
21. Diseases of the ear except defects of hearing	69	11.48	50	19	68	11.59	49	19	1	7.04	1	.....
22. Alcoholism	58	9.65	56	2	58	9.89	56	2	.....	.....	.....	.....
23. Diseases of the respiratory system	35	5.83	29	6	35	5.97	29	6	.....	.....	.....	.....
24. Tuberculosis	31	5.16	22	9	29	4.94	20	9	2	14.09	2	.....
25. Weakness of mind	28	4.66	16	12	27	4.60	15	12	1	7.04	1	.....
26. General diseases except as shown in detail	25	4.16	23	2	25	4.26	23	2	.....	.....	.....	.....
27. Diseases of the nervous system except as shown in detail	22	3.66	7	15	22	3.75	7	15	.....	.....	.....	.....
28. Overweight and obesity	17	2.83	17	.....	16	2.73	16	.....	1	7.04	1	.....
29. Physical debility	14	2.33	14	.....	14	2.39	14	.....	.....	.....	.....	.....
30. Diseases of the digestive system except as shown in detail	11	1.83	11	.....	11	1.88	11	.....	.....	.....	.....	.....
31. Diseases of the circulatory system except as shown in detail	10	1.66	10	.....	10	1.70	10	.....	.....	.....	.....	.....
32. Overheight	4	.67	4	.....	4	.68	4	.....	.....	.....	.....	.....
33. Epidemic diseases	3	.50	3	.....	3	.51	3	.....	.....	.....	.....	.....
34. Causes not physical	1,050	174.77	1,050	.....	1,000	170.47	1,000	.....	50	352.11	50	.....
Total	6,008	1,000.00	5,625	383	5,866	1,000.00	5,484	382	142	1,000.00	141	1

Venereal diseases, which caused the largest proportion of rejections in 1905, dropped to fourth place as a cause of rejection during the last year. First place was taken by defects of vision, which caused 129.50 rejections per 1,000 examined, compared with 86.01 for the previous year. Heart disease, which last year caused 92.43 rejections per 1,000, fell to 36.62 in 1906, while defects of teeth, which in 1905 caused but 27.34 rejections per 1,000, rose to 78.23 for 1906.

The causes of the apparent decreased importance of venereal and heart diseases and the increased importance of defects of vision are not evident.

The reduction in the number of rejections for varicocele from 70.11 in 1905 to 33.62 in the last year was due to the change in the standard as regards this condition, and has been attended with no bad result.

The increased rejections for defective teeth was due to the temporary raising of the standard, as already noted.

SANITATION.

The high rates for malarial diseases in the army and the unpleasant fact that they have steadily increased since 1904 led to an investigation as to the thoroughness of the measures which had been taken to control these diseases in our tropical garrisons.

Effective screening against mosquitoes is one of the most necessary preventive measures, but it was found that practically nothing has been accomplished along this line in the Philippine Islands. The latest reports from that division, just received in this office, show that in the department of the Visayas not even a single hospital is screened, while the department of Luzon has but three buildings or parts of buildings thus protected. Recommendation was accordingly made from this office June 5, 1907, that all barracks, quarters, and hospitals used by American troops be thoroughly screened with 18-mesh wire gauze so as to exclude all mosquitoes. What action has been taken on this recommendation is not known.

In view of the facts that typhoid fever and other infectious diseases are often transmitted by flies and that flies breed especially in horse manure, recommendation was also made that all stables at military posts be provided with a fly-proof room or bin for storage of manure, and that the manure be so treated, handled, and disposed of as to prevent the breeding of flies therein.

BOARD FOR THE STUDY OF TROPICAL DISEASES.

This board has been actively at work since the date of last report, and, besides valuable contributions of pathological specimens to the Army Medical Museum, has attained some excellent results in the investigation of tropical diseases. The first original discovery made by the board was that of a new blood parasite, which they designated Filaria Philippinensis. This new filaria, while so far as known, not pathogenic, is of interest as being of common occurrence among natives of the Philippine Islands. Its presence in the mosquito, *Culex fatigans*, as well as its life history in that insect, has been demonstrated.

The board has also investigated the prevalence of entameba coli among healthy American soldiers and has found it among a very large percentage, and demonstrated its continued presence in the intestine for long periods without producing symptoms. The board

also concludes that entameba dysenteriæ may be readily distinguished morphologically from entameba coli and is uniformly pathogenic.

After an exhaustive study of dengue the board is unable to find any organism in the blood of infected persons, but has been able to reproduce the disease in susceptible individuals by intravenous inoculation of filtered and unfiltered blood from dengue patients. It has been able to prove the transmission of the disease by a mosquito, *Culex fatigans*, and concludes that the disease is not contagious.

Yaws has been found to be quite prevalent among the natives in certain districts, and the *Treponema pertenue* was found in abundance in the lesions; the disease was also reproduced in monkeys inoculated with material from the lesions of yaws in the human subject.

UNITED STATES, CONTINENTAL, EXCLUSIVE OF ALASKA.

The average mean enlisted strength of the troops serving in the United States during the year was 40,621, of which 38,140 were white and 2,481 were colored.

This year for the first time those discharges and deaths which occurred among soldiers in the United States whose commands were in the Philippine Islands, Alaska, Hawaii, or Cuba, and who had been invalided home, were charged to the country from which the soldier was invalided.

The admission and death rates, 1,179.93 and 5.28, were lower than those for last year, 1,250.29 and 6.14, and considerably lower than the corresponding rates for 1904. The discharges for disability and constantly noneffective rates, 32.29 and 46.92, were slightly lower than for the previous year, 33.88 and 47.26, and compare favorably with the low rates of 1904.

The death rate for disease, 2.84, was the lowest of which there is any record in this office, being but slightly greater than that for external causes, 2.44.

Venereal diseases again led all others as causes of admission, discharge, and noneffectiveness, but the rates were slightly lower than for the previous year. Next in order of importance as causes of admission were diarrhea and enteritis, rate, 73.68; malaria, rate, 50.27; bronchitis, acute and chronic, rate, 48.03, and alcoholism and its results, rate, 32.27.

As a cause of death tuberculosis led, with a rate of 0.78, followed, successively, by typhoid fever, rate, 0.28; pneumonia, rate, 0.24; appendicitis, rate, 0.21, and organic disease of the heart, rate, 0.17.

The following comparison between the death rates for certain special diseases for the years 1901 and 1906 shows where the most notable improvement has taken place:

Cause of death.	1901.	1906.
Typhoid fever	0.64	0.28
Alcoholism	.26	.02
Dysentery	.42	.00
Pneumonia	.57	24
Acute and chronic nephritis	.41	.12

As causes of noneffectiveness, after venereal diseases, followed in order tuberculosis, rheumatism, and bronchitis.

PREVALENCE OF SPECIAL DISEASES.

TYPHOID FEVER.

There was a decided increase in the number of admissions for typhoid fever in 1906, as compared with 1905, the respective ratios being 5.66 and 3.57; the death ratio, however, was slightly decreased, 0.28, against 0.30 for 1905. The case mortality fell from 8.5 per cent to 5.2 per cent.

The camps of instruction were responsible for the increased admission rate, over 40 per cent of all admissions having come from that source; Camp Benjamin Harrison gave 35 admissions, at American Lake there were 20 admissions, and at Chickamauga Park 18 admissions. Typhoid fever appeared in every camp, though there was only one case from the camp at Austin, Tex. The sanitary conditions in the camps were unusually good, and the chief surgeons concerned generally reported that the infection occurred during the marches to the camps as a result of the soldiers drinking impure water. Forts Snelling and Oglethorpe had the largest number of admissions, 18 and 11, respectively, and in each instance the infection was believed to have been brought from a camp of instruction.

The following comparative table shows the more important changes in the number of admissions at posts for 1905-6:

Post.	1905.	1906.
Fort Myer	20	1
Columbus Barracks	13	5
Fort Logan	9	4
Whipple Barracks	9	0
Washington Barracks	9	0
Fort Snelling	3	18
Fort Oglethorpe	0	11
Fort Riley	4	8
Fort Schuyler	0	7
Fort Leavenworth	0	4

The decreased rates at Fort Myer and Washington Barracks may have been connected with the improvement in the character of the water supply of the city of Washington; the increased rate at Fort Leavenworth may be explained by the difficulties with the sewage purification plant; in the other cases nothing has been reported showing the cause of the change.

UNDETERMINED FEVERS.

There was a slight advance in the ratio of these fevers from 6.91 to 7.73 admissions per 1,000.

MALARIAL DISEASES.

The admission rate for this class of diseases was 50.27, compared with 45.29 for the previous year and 49.16 for 1904.

YELLOW FEVER.

No case of yellow fever occurred at any military post in the United States during the year.

ERUPTIVE FEVERS.

Smallpox and measles showed an increased admission rate for the year, 0.30 and 6.35, respectively, compared with 0.16 and 5.32, the corresponding figures for the previous year, and 0.32 and 17.98 for 1904. The admission rate for smallpox was nearly twice as great as for 1905; there were no fatalities.

DYSENTERY.

The admission rate for dysentery was 5.96, compared with 5.23 for 1905 and 8.49 for 1904; more than one-half of the infections were of the amebic type. There was no death from this disease.

CEREBROSPINAL MENINGITIS.

One case of cerebrospinal meningitis occurred during the past year and resulted fatally.

TUBERCULOSIS.

All the ratios for tuberculosis were slightly higher than for 1905. The admission rates for the two years were 5.22 and 4.72 respectively.

VENEREAL DISEASES.

There was some improvement in the rate for venereal diseases in the United States. The admission rate fell from the abnormally high figure of 178.72 per 1,000 for 1905 to 158.91 for the past year.

LEPROSY.

The case of leprosy which has been under treatment since early in the year 1903 is reported to have somewhat improved recently both as regards general condition and the local lesions.

ALCOHOLISM.

The high admission rate of 30.22 per 1,000 men recorded in 1905 for alcoholism was increased to 32.27 in 1906; the other rates remained about the same, except the death rate, which was greatly diminished. This office concurs in the opinion expressed by most medical officers of the army that the abolition of the sale of beer in post exchanges has had much to do with the increase of venereal diseases and alcoholism in the army by driving the soldiers to disreputable resorts outside of the post and beyond the control of the post authorities.

INSANITY.

There was a further decrease in the rate for insanity compared with the previous year, the figures being 1.33 per 1,000 for 1906 and 1.61 for 1905.

PNEUMONIA.

The admission and death ratios for pneumonia showed vast improvement compared with the figures for the two years previous. The case mortality for the year was but 10.5 per cent.

DIARRHEA AND ENTERITIS.

The admission ratio for these diseases was increased to 73.68 compared with 51.80 for the previous year, and 69.07 for 1904.

HEPATIC ABSCESS.

The admission rate for this disease was 0.17 per 1,000 of mean strength, compared with 0.21 for the previous year.

INFLUENCE OF STATION.

As during the previous year, all the rates except for deaths were highest in the Department of the Lakes. The discharge for disability rate was particularly high, being nearly three times as great as that for the United States total and six times as great as that for the Department of California. The high rates in the Department of the Lakes may be accounted for in a measure by the fact that at the large recruiting depot at Columbus Barracks many recruits are held on sick report for long periods to determine their fitness for service and that many of them are finally discharged because of failure to meet the physical requirements.

The lowest admission rate was in the Department of the Missouri; the lowest death, discharge, and noneffective rates in the Department of California.

The following table shows the relative prevalence of certain special diseases by departments. It will be observed that the Department of the Lakes was notable as having the highest rates for gonorrhea, measles, mumps, and rheumatism; the Department of Texas having the highest rates for malaria and tuberculosis and the lowest for rheumatism and bronchitis; the Department of the Missouri as having the lowest rate for influenza; the Department of Dakota having the highest rates for typhoid fever and syphilis and the lowest for tuberculosis and pleuritis; the Department of the Colorado as having the highest rate for influenza and lowest for gonorrhea; the Department of California having the highest rates for bronchitis and dysentery; the Department of the Gulf as having the lowest rate for pneumonia; the Department of the East the lowest rate for dysentery; and the Department of the Columbia the highest rates for pneumonia and pleuritis and the lowest for malaria, typhoid fever, and syphilis.

DEPARTMENT OF THE EAST.

The post having the highest noneffective rate in this department was Fort Washington, 64.95, and the lowest Fort Williams, 20.09. The cause of the high noneffective rate at Fort Washington was malarial diseases.

DEPARTMENT OF THE GULF.

Fort Oglethorpe showed the highest noneffective rate, 77.43, of any post in this department; venereal diseases, typhoid fever, and injuries caused most of the noneffectiveness.

DEPARTMENT OF THE MISSOURI.

Fort Des Moines had the lowest admission rate, and excluding alcoholism, venereal diseases, and injuries, the lowest noneffective rate of posts in the department. The highest noneffective rate was recorded at Fort Riley, venereal diseases and injuries being the leading causes. The health conditions for the entire department remained practically the same as during the previous year. Diseases of the respiratory tract and the digestive system were responsible for the largest number of admissions to sick report.

DEPARTMENT OF THE COLUMBIA.

A number of cases of typhoid fever believed to have been contracted while at target practice at Touchet, Wash., materially increased the sick rates of the troops serving in this department; all the rates were slightly higher than during the previous year. Vancouver Barracks showed the highest noneffective rate, while Fort Flagler had the lowest for the year.

DEPARTMENT OF THE COLORADO.

Fort Logan had the highest admission rate and the highest noneffective rate of the posts in this department. Fort Huachuca had the lowest noneffective rate. Typhoid fever and venereal diseases contributed largely to the high rates at Fort Logan.

DEPARTMENT OF TEXAS.

Fort Bliss had the lowest noneffective rate and Fort Clark the highest during the year. The health of troops stationed in this department improved considerably compared with the previous year, the sick rates being less than for several years past.

DEPARTMENT OF THE LAKES.

The health of the command compares favorably with that of previous years. Fort Thomas had the highest admission and noneffective rates of the posts in the department, attributable largely to venereal diseases and injuries, while Fort Wayne reported the lowest noneffective rate.

DEPARTMENT OF DAKOTA.

The highest noneffective rate was recorded at Fort Snelling and the lowest at Fort Meade. Fort Meade also showed the lowest admission rate for the year. A number of typhoid fever cases, together with venereal diseases and injuries, produced the high rate at Fort Snelling.

DEPARTMENT OF CALIFORNIA.

Excluding injuries, venereal diseases, and alcoholism, Fort Baker showed the highest admission rate of posts in this department, while the lowest noneffective rate was recorded at the Presidio, San Francisco. The highest noneffective rate was also recorded at Fort Baker. The health of the troops throughout the year was excellent.

In admissions from all causes and in admissions from all causes excluding injuries, venereal diseases, and alcoholism, Fort Des Moines had the lowest rates. From the point of low noneffectiveness Fort Meade stood first. The highest admission rate was recorded at Fort Washington, while troops stationed at Fort Oglethorpe furnished the highest noneffective rate. Excluding injuries, venereal diseases, and alcoholism the Fort Thomas command reported the highest noneffective ratio.

INFLUENCE OF AGE AND LENGTH OF SERVICE.

The admission rate was highest for soldiers 19 years old and under and fell rapidly up to the age of 49, after which there was a slight rise; the discharge for disability and noneffective rates had the same characteristics; the death rate was lowest at the age of 30 to 34 years, after which there was a considerable rise; the highest death rate in soldiers under 45 years of age occurred in those of 19 years and under.

From the point of view of length of service all the rates were highest in the first year except the death rate, which was highest in the third year. The lowest discharge rate was recorded for soldiers in their third year of service; the lowest death rate in those in their fourth year, while the lowest noneffective rate was reported for soldiers who had 10 years' service and over.

INFLUENCE OF SEASON.

The highest admission and death rates were recorded in August; the highest noneffective rate in February; the lowest admission and noneffective rates in November and July, respectively, and the lowest death rate in December.

INFLUENCE OF RACE.

As usual, all rates for colored troops, except the death rate, were considerably lower than those for white soldiers. The admission, discharge for disability, death, and noneffective rates for colored troops from all causes were 884.32, 16.22, 10.68, and 37.35, respectively, compared with 1,199.16, 33.32, 4.94, and 47.55, the corresponding figures for white troops.

All the rates for colored troops, except the noneffective figure, were much lower than those for the previous year.

For disease only the admission, discharge, and constant noneffective rates were better for colored than for white soldiers, but the death rate of the former class was nearly two and a half times as great as for the latter. The death rate among the colored troops was greater than among the white in nearly all classes of diseases, especially so in the diseases of the respiratory, digestive, and circulatory systems. The rate for tuberculosis was more than four times as great, and for pneumonia more than tenfold. It is noticeable that while there were 22 deaths from drowning among the white troops, there was none among the colored.

The relative prevalence of certain special diseases among white and colored troops, with the admission rates per 1,000 for each, are shown in the following table:

Special diseases.	White.	Colored.
Venereal diseases	159.47	150.34
Tonsillitis	60.23	33.45
Bronchitis, acute and chronic	49.71	22.17
Diarrhea, including enteritis	75.56	44.74
Malaria	52.20	20.56
Influenza	23.02	21.77
Muscular rheumatism and myalgia	31.93	39.50
Hemorrhoids	7.89	16.53
Rheumatism, subacute and chronic	7.05	9.67
Measles	6.74	.40
Dysentery	6.14	3.22
Tuberculosis	4.96	9.27
Typhoid fever	6.00	.40
Pneumonia	2.20	4.43
Frostbite and freezing	.71	4.43
Smallpox	.16	2.42

The relative importance of certain special diseases as causes of death, with the death rates per 1,000 for each race, was as follows:

Special diseases.	White.	Colored.
Tuberculosis	0.65	2.77
Pneumonia	.15	1.58
Typhoid fever	.30	.....
Alcoholism	.03	.....
Venereal diseases	.05	.40
Bronchitis, acute and chronic	.03	.....
Malaria	.03	.....
Influenza	.03	.....

DISCHARGES FOR DISABILITY.

Of the 1,364 men discharged for disability in the United States, over 64 per cent were for disabilities not incurred in line of duty, and of these, 51 per cent were contracted before enlistment. The principal causes of discharge, with the number for each cause, were: Tuberculosis 149, venereal diseases 165, defective vision 141, defective hearing 90, and organic disease of the heart 71.

CAMPS OF INSTRUCTION.

The health of the commands in these camps was generally excellent, although typhoid fever made its appearance in all of them. A considerable number of cases occurred at the camps at Fort Benjamin Harrison, Chickamauga Park, and American Lake. In no case did the disease assume anything like epidemic proportions. Most of the cases were contracted on the march to camp or brought from the home stations of the troops, while in those instances in which infection was contracted when in camp it is believed that the source of infection was outside the camp proper.

The sanitary condition of the camps was generally very good indeed, probably better than in any previous maneuvers. With one or two exceptions where the water supply was considered absolutely

pure, all drinking water used in the camps was sterilized. On the march to and from camp the sterilization of water was not so carefully attended to; neglect in this respect was probably responsible for many of the cases of typhoid fever. It is believed that this source of infection might be avoided by providing means for the sterilization and transportation of drinking water on the march, and therefore recommendation has been made that water carts, together with sterilizing apparatus, be regularly supplied to troops for use on the march.

Various methods of disposing of excreta were given a trial to ascertain which was the best. As a result of these trials it was recommended that the McCall incinerator be adopted as the standard appliance for the disposal of excreta in camps.

The disposal of kitchen wastes and garbage offered another problem, the solution of which was not satisfactorily settled, but it was recommended that portable camp crematories be furnished for this purpose. Certain it is that organic wastes of any sort should not be deposited in pits in the ground or left on the surface anywhere within the camp area.

The shower baths, which were generally erected in all the camps by the quartermaster's department, proved their great value and should form a part of the regular equipment of all future camps. While these provided for the cleanliness of the person of the soldier, the washing of the soldiers' underclothing was not satisfactorily worked out. In some of the camps portable laundry machines were provided and are said to have given good results. Further experiments should be made along this line.

With a view to protection from flies, which are known to carry typhoid fever, many of the camp surgeons recommended that kitchen and mess tents should be provided with fly-proof screens. It is believed that such protection is a necessary sanitary measure.

As has always been the case in previous maneuvers, the personnel of the medical department was entirely inadequate in numbers to properly carry out maneuver problems in the field work of the medical department. By removing all available medical officers from posts in the maneuver districts and replacing them with contract surgeons, and reducing the hospital corps personnel of the same posts to the lowest number compatible with efficiency, it was possible to provide for the camps a number of medical officers not more than sufficient to care for the sick and the sanitation of the camps of instruction.

Sanitary squads, a new feature in sanitary work, were tried for the first time in these camps. These squads were composed of noncommissioned officers and men of the hospital corps and of civilians hired by the quartermaster's department and turned over to the medical department for its use. The function of these squads was, with the approval of the commanding officer, and under the direction of the surgeon, to carry out the sanitary measures recommended by medical officers, such as the sterilization of water, the disposal of excreta, the care of the sinks, measures for the destruction of mosquitoes and flies, and the many other details of camp sanitation. The sanitary squad was a complete success, and recommendation will be made looking to a permanent organization of this character.

SANITATION.

Barracks and quarters in general have been reported in good condition; overcrowding of guardhouses and barracks has been recorded at a few posts.

The adoption of an isolation pavilion separate from the main hospital marks a decided advance in hospital construction during the year. This pavilion provides accommodation for the separate isolation of several different sorts of contagious disease and is complete in itself except that cooking is done in the main hospital. Each pavilion is provided with a steam-disinfecting plant and with diet kitchens and bathrooms. The first of these new isolation buildings was erected at Fort Myer during the year, and thus far has proved entirely satisfactory.

Drainage and sewage disposal in posts remains about the same as last year. Some of the biological sewage purification plants have been enlarged to meet the wants of increased garrisons, and an additional one has been erected at Fort Benjamin Harrison.

The McCall incinerator has been adopted as the preferred type to gradually replace the Reed trough system for the disposal of excreta in the field in permanent and semipermanent camps. About 75 of these incinerators have been issued and very favorable reports have been received as to their operation.

Investigation is now being made to secure a satisfactory garbage destructor for field use.

Water supply at posts, as a rule, is of sufficient quantity and of good quality. Efforts have been continued to secure a satisfactory means of purification of water in the field, but so far without entire success. A new type of field filter, invented by Capt. C. R. Darnall of the medical department, has been given a trial by a board of officers with sufficiently satisfactory results to justify the purchase of several of these filters for further trial in the field under service conditions.

To meet the needs of moving commands for a ready supply of drinking water beyond that carried in canteens, it was recommended that a suitable water cart be adopted, and the quartermaster's department is now engaged in the construction of such a cart.

A large wheeled water sterilizer of German pattern has been given a trial with troops in Cuba, and while the results, so far as obtaining a sterile water, have been satisfactory, the design of the apparatus is faulty, which will probably prevent its adoption.

There have been few complaints of the clothing furnished enlisted men, though a number of medical officers have reported the cotton khaki garments as being generally ill fitting and not permanent in color.

The provision in the last army appropriation bill for the establishment of steam laundries at posts is a great advance from a sanitary point of view over the old method of allowing the soldier to have his laundry done wherever he wished. It is hoped that the new plan will be a decided assistance, not only in preventing the introduction of contagious diseases into posts but also in maintaining the personal cleanliness of the soldier.

A portable sterilizer for field use in the disinfection by steam of the clothing and effects of soldiers suffering from infectious diseases

has been added to the supply table and is expected to prove a very valuable adjunct in the suppression of outbreaks of contagious disease in the field.

The necessary steps to obtain conditions at all posts which will be satisfactory from a sanitary point of view are being taken, and while all defects can not be corrected immediately, recommendations tending to improve the sanitation of military stations and their environments usually receive the favorable consideration of the proper authorities, and the measures recommended are executed as soon as the funds, labor, material, etc., become available.

A general idea of the sanitary conditions of the different posts in each military department may be gained from the following data taken from the sanitary reports and the annual reports of chief surgeons of departments:

DEPARTMENT OF THE EAST.

Fort Andrews, Mass.—A crematory is needed at this post, as garbage and other wastes thrown into the sea are washed back upon the shore.

Fort Du Pont, Del.—On account of the flat grounds and lack of slope in mains the same unsatisfactory conditions exist in regard to drainage and sewerage at this post as previously reported.

Fort Hamilton, N. Y.—Buildings are for the most part old and unsuitable for their purposes. A request for an ice plant was disapproved. The quality of the ice obtainable is inferior.

Fort Hancock, N. J.—The water supply is unsatisfactory; work on deep wells is progressing. The crematory needs remodeling and the filling in of the swamps should be completed as soon as practicable. The vacant shacks on the reservation formerly occupied by married soldiers should be torn down.

Fort Howard, Md.—The swamp portion of this reservation should be filled in or drained. The marshes have been full and overflowing most of the year as a result of excessive rainfall.

Fort Jay, N. Y.—Barracks at this post are very old and unsatisfactory. A new hospital is very much needed, but must wait completion of extension of area of Governors Island. The hospital building is a dilapidated frame structure and is not worth repair.

Fort McKinley, Me.—The water supply is insufficient in dry weather.

Fort Mott, N. J.—A crematory and means of distributing the distilled water are needed at this post. The swamps on the reservation should be filled in and drained.

Fort Myer, Va.—Owing to defective surface drainage of reservation and surrounding country, which prevents the destruction of their breeding places, mosquitoes are very numerous.

Fort Niagara, N. Y.—The water supply, taken from the Niagara River, is sterilized before use. Efforts to secure a safe supply have so far been unsuccessful.

Fort Ontario, N. Y.—The quarters occupied by the noncommissioned officers and their families are improperly and poorly heated. Small hot-water heating plants should be installed in these buildings.

Plattsburg Barracks, N. Y.—Certain frame buildings occupied by civilians are reported as insanitary. The presence of the Delaware

and Hudson Railroad is considered a nuisance on account of the proximity of trains, etc. It also occupies the most desirable building site. The general sanitary condition is unsatisfactory. Some of the barracks are overcrowded and poorly ventilated. Plumbing throughout the post is obsolete and needs thorough overhauling. Electricity should be substituted for the present means of lighting the post.

Fort Schuyler, N. Y.—The casemate barracks are damp, poorly lighted and ventilated, and unfit for use as quarters.

Fort Strong, Mass.—The method of the disposal of garbage employed at this station is unsatisfactory.

Fort Wadsworth, N. Y.—The casemate barracks are leaky, poorly ventilated, poorly lighted, and generally insanitary, owing to structural defects, and cause a large number of admissions to sick report for respiratory diseases.

Fort Warren, Mass.—The insanitary moat on this reservation is still only partially filled.

Washington Barracks, D. C.—The old buildings on the grounds of the War College are insanitary. They should be removed and proper drainage secured for the sites which they occupy.

Fort Washington, Md.—All tall grass, weeds, and underbrush on the reservation should be cut down, so as to remove the many natural harboring places for mosquitoes, and to expose the earth to the sun's rays, so that it may be thoroughly dried on sunny days.

Fort Williams, Me.—The guardhouse is unsatisfactory, in that it lacks lavatory accessories. The dwellings used as quarters for married enlisted men are old and their sanitary condition poor.

DEPARTMENT OF TEXAS.

Fort Bliss, Tex.—The sanitary condition of the post is excellent, the buildings modern, and the water supply good.

Fort Clark, Tex.—The quarters are old, obsolete, and really unfit for occupancy. The water supply is piped from a fresh flowing spring on the reservation. The drinking water is distilled at the ice plant. Excreta is removed by the trough and odorless excavator system.

Jefferson Barracks, Mo.—The sanitary conditions at this post are good, except the water-closets in the hospital, which are primitive and need constant repair. The hospital is inadequate and unsuited to the needs of the garrison. Appropriation has been made for a new hospital.

Fort Logan H. Roots, Ark.—The sanitary condition of the post may be regarded as good. The buildings are new and modern and the water supply satisfactory.

Fort McIntosh, Tex.—The public buildings at this post are in a good state of repair, and the general sanitary condition of the reservation is satisfactory.

Fort Reno, Okla.—The water used for drinking is hauled from a distance of 4 miles. The water supply in general is piped from wells in the Canadian River bottom, but is hard and scarcely fit for drinking purposes. The buildings are old, but in fairly good repair.

Fort Sam Houston, Tex.—The sanitary condition of this post is excellent. The buildings are new and modern, and the water supply and methods of disposal of excreta and wastes are satisfactory.

Fort Sill, Okla.—The buildings upon this reservation are old; the roofs of the barracks and some of the quarters are leaky. The guardhouse is inadequate and insanitary. The surrounding country is conducive to the propagation of mosquitoes, and as the quarters and barracks were poorly screened malarial diseases were prevalent during the year. Recommendation for the installation of 18-mesh wire screens at this post was not carried out.

DEPARTMENT OF THE LAKES.

Fort Sheridan, Ill.—The guardhouse at this post is deficient in laundry facilities for the prisoners. Plumbing in the older buildings is defective, fixtures are old, soiled, and stained, and the floors of some lavatories are broken, permitting the entrance of waste and filth, and subsequent decomposition. A septic tank should be installed to prevent pollution of the lake water, which is the source of supply of several communities in the vicinity.

Fort Wayne, Mich.—Two new barracks and four sets of officers' quarters have been completed and occupied at this post during the year, all being of modern construction and equipment. The present hospital is too small for the garrison. Several additional rooms are necessary.

Fort Thomas, Ky.—The sanitary condition of this post is good. The new plumbing authorized for officers' quarters and barracks of the enlisted men is being installed in a rapid and satisfactory manner. Water used for drinking purposes is boiled.

DEPARTMENT OF CALIFORNIA.

Alcatraz Island, Cal.—The sanitary condition of barracks is considered good since the overcrowding has been relieved by the completion of a new set. The military prison is reported very much overcrowded.

Benicia Barracks, Cal.—Public buildings are old and were considerably damaged by the recent earthquake. The grounds and roads are in poor condition.

Presidio of San Francisco, Cal.—The buildings at this post were more or less seriously damaged by the recent earthquake.

Depot of recruits and casuals.—Buildings are clean and well policed, but overcrowded, especially in recruit barracks. The trough latrine system in use is far from satisfactory. The troughs are old and corroded and impossible to clean. Additional barracks should be provided and modern sanitary plumbing installed at this post.

DEPARTMENT OF DAKOTA.

Fort Assiniboine, Mont.—There has been no important change in the sanitary condition at this post during the year. The water supply is uncertain in quantity, fluctuating directly with the character of the weather and season, the supply being seepage from the adjacent

Beaver Creek. Its quality is poor, at times even dangerous. Whenever the water supply becomes deficient disposal of sewage becomes a serious problem.

Fort William Henry Harrison, Mont.—The sanitary conditions are good. The water supply is inadequate, but of excellent quality. Work upon an addition to the hospital is in progress.

Fort Keogh, Mont.—Barracks and quarters are old and in fair condition. Water supply is of inferior quality; some method of filtration should be installed if the post is to remain garrisoned.

Fort Lincoln, N. Dak.—There was no change in the sanitary condition during the year.

Fort Missoula, Mont.—The sanitary condition is satisfactory, no important change having been made during the year.

Fort Snelling, Minn.—Several improvements and additions were made to the hospital at this post during the year. The sanitary condition appears to be satisfactory.

Fort Yellowstone, Wyo.—No important change in the sanitary condition has been made during the year.

DEPARTMENT OF THE COLORADO.

The sanitary conditions of posts in this department were satisfactory throughout the year.

DEPARTMENT OF THE MISSOURI.

Fort Des Moines, Iowa.—The sewage-disposal plant which was reported out of order several times during the year is now working satisfactorily. The buildings and grounds are in an excellent sanitary condition.

Fort Leavenworth, Kans.—The quality of the water supply at this post is not altogether satisfactory. All water used for drinking purposes is boiled and clarified before use.

Fort Meade, S. Dak.—When the new quarters, now being erected to replace the old buildings, are completed the sanitary condition of the post will be satisfactory.

Fort Omaha, Nebr.—A large filter has been requested for this post as the water is of poor quality; the supply is ample.

Fort Riley, Kans.—Aside from a few minor defects the buildings are in a satisfactory sanitary condition.

DEPARTMENT OF THE GULF.

Fort McPherson, Ga.—The sanitary condition of the post is good. The new pumping machinery and reservoir for water with accompanying piping were completed during the year. The water supply is now ample and of excellent quality. A new and modern hospital is urgently needed for this post, which now has quarters and accommodations for a full regiment of infantry.

Fort Morgan, Ala.—The sanitary condition of this post up to the time of the severe storm in September was good; since that time the conditions have been unsatisfactory. The sewer and water systems have been partially and temporarily repaired. The buildings are in a damaged condition. Rain water is used for drinking purposes.

Fort Oglethorpe, Ga.—The sanitary conditions are considered good. The most important improvement during the year was the enlargement of the septic tank, increasing its capacity 50 per cent.

Jackson Barracks, La.—The following sanitary improvements were made during the year: Completion of screening of buildings at the post, completion of an isolation ward for yellow fever patients, screening of cisterns and building of 20 new cisterns and a new sewer. The following defects have not yet been remedied: Building of pumping station to pump sewage of the post into the river; connecting lavatory, bath, and kitchen sinks with sewer, and providing new building for one company and new quarters for commissioned officers.

Fort St. Philip, La.—The sanitary condition has been satisfactory. Most of the damage to the buildings by the severe storm of September 27 has been repaired.

Fort Barrancas, Fla.—The sanitary condition of this post is considered good. The buildings are in fairly good repair. Natural drainage of the post proper is good; low lands adjacent are drained by open ditches.

Fort Dade, Fla.—The sanitary conditions are excellent. The clearing away of a palmetto jungle from a greater portion of the reservation was a great improvement.

Key West Barracks, Fla.—The sanitary condition is not considered entirely satisfactory. The present guardhouse is very old, small, and insanitary. The sleeping quarters for the hospital corps detachment are inadequate.

Fort Screven, Ga.—Conditions have been much improved during the year by grading and filling in the low places, the level being raised about 18 inches in rear of barracks and officers' quarters.

Fort Fremont, S. C.—The sanitary condition is good.

Fort Moultrie, S. C.—While the sanitary condition is considered good, the drainage is poor, owing to the slight difference between the ground and sea level. The heating of the barracks by hot air has not been satisfactory.

Fort Caswell, N. C.—No sanitary defect of importance has been reported.

DEPARTMENT OF THE COLUMBIA.

Fort Casey, Wash.—Sanitary conditions were satisfactory during the year.

Fort Flagler, Wash.—The sanitary condition was improved during the year by the removal of the dense underbrush on the reservation and the construction of surface drains.

Fort Lawton, Wash.—Steps have been taken to increase the water supply, which has not been sufficient during the year. Owing to the presence of a salt-water marsh upon the reservation, mosquitoes are a pest during the summer months. Recommendation was made that the marsh be filled in and that the woodland between the post and Puget Sound be cleared of underbrush and many of the trees.

Fort Stevens, Oreg.—The pools of stagnant water surrounding the buildings should be filled in or graded so as to promote drainage.

Vancouver Barracks, Wash.—The floors of the old barracks are badly worn and remain damp after they have been mopped. The metal troughs in the water-closets are insanitary.

Fort Walla Walla, Wash.—Since the new sets of brick barracks have been completed and occupied the sanitary condition of this post has improved. The old buildings, with a few exceptions, are in poor condition.

Fort Ward, Wash.—No sanitary defect of importance has been reported during the year.

Fort Wright, Wash.—The pits of the quarters occupied by the civilian employees have been replaced by water-closets during the year.

ALASKA.

The average mean enlisted strength of the troops serving in Alaska during the year was 805, composed of infantry, signal corps, and hospital corps, all white.

The health of troops serving in Alaska was satisfactory; indeed, much better than for last year, when the Alaskan posts were reported as being remarkably healthy stations for troops. All the sick rates were considerably lower during the past year than in 1905, the admission, death, and noneffective rates being 714.29, 6.46, and 23.87, compared with 944.97, 9.37, and 30.80, respectively, the corresponding rates for the preceding year, and 1,179.93, 5.28, and 46.92, the rates for the United States proper.

There was 1 case of typhoid fever during the year at Fort Gibbon, resulting fatally. There was only 1 admission for malaria and 2 for fevers undetermined. The admission rates for tuberculosis and alcoholism, 4.97 and 27.33, respectively, were far better than for the previous year, and compare favorably with 5.22 and 32.27, the corresponding rates for the United States proper in 1906. The admission rate for venereal diseases was slightly increased, compared with the rate for the previous year; this class of diseases also caused the highest noneffective rate among the troops serving in Alaska.

Only 5 men were invalided home during the year, 1 of whom was returned to duty, 1 discharged for disability, 1 otherwise disposed of, and 2 were on sick report at the end of the year. No one disease was prominent as an invaliding factor.

Excluding injuries, venereal diseases, and alcoholism, the post having the highest admission and noneffective rates was Fort Egbert, which in 1905 had next to the highest rates. The post having the lowest admission rate was Fort Davis, while the lowest noneffective rate was recorded at Fort St. Michael. The highest admission and noneffective rates were noted in July and June, respectively, and the lowest in February and December.

SANITATION.

Fort Davis.—There is no sewerage system at the post; good surface drainage. Wastes are carted away and dumped on the beach 1 mile east of post.

Fort Egbert.—New hospital was occupied in July. Dry-earth system formerly in use has been replaced by company latrines and trough system. Sewerage system for laundry and wash rooms.

Fort Gibbon.—Drainage of parade ground has been improved. Guardhouse is being enlarged. Well water used for drinking. Sanitary condition of post satisfactory.

Fort Liscum.—During the year the water system has been completed and all inhabited buildings supplied with running water. The drinking water is excellent.

Fort St. Michael.—Water supply excellent. Sanitary condition of the post is good.

Fort William H. Seward.—The post is in a good sanitary condition, except that the water supply is exposed to contamination by post drainage and the possible infection of the small streams which flow into the tract of water adjoining the post from which the supply is obtained by means of a crude and extemporized system. During the summer the supply is much restricted and heavily loaded with organic matter.

CUBA.

These statistics only include the last three months of 1906, during which American troops were again stationed in Cuba.

The strength of the command averaged about 4,491 soldiers, though all the ratios are based on the mean annual strength of 1,123. There were 1,310 admissions to sick report, 4 discharges for disability, and 3 deaths, equivalent to rates of 1,166.52, 3.19 and 2.40, respectively, per 1,000 of strength. A constantly noneffective rate of 30.77 was recorded for troops serving in Cuba.

For disease the principal causes of admission with ratios for each were diarrhea and enteritis 211.93, venereal diseases 164.74, malarial fevers 72.13, and typhoid fever 57.88; these same four diseases also caused the greatest amount of noneffectiveness, venereal diseases leading with a rate of 7.18, typhoid fever 5.48, diarrhea and enteritis 2.26, and malaria 1.80; there were only 3 deaths, 2 from typhoid fever and 1 from fever undetermined.

TYPHOID FEVER.

Maj. H. P. Birmingham, medical inspector, Army Cuban Pacification, has made a most interesting and valuable report upon the outbreak of typhoid fever which occurred in that army. There were 65 well-authenticated cases, with 2 deaths, during the period from October 1 to December 31 in the command. In summing up the result of his careful investigation as to the mode of origin and spread of the outbreak, Major Birmingham says:

> I have been strongly impressed with two points, viz, what appears to me to be the fact that this disease was disseminated largely, if not wholly, by personal contact (either directly personal or secondarily through clothing, equipage, etc.), and, secondly, that the origin of the disease, with few exceptions, could be traced to the maneuver camps at which the troops were assembled the previous summer. An interesting fact, to which I have previously called attention, is that in the First Battalion, Twenty-eighth Infantry, which regiment was badly infected before leaving the United States, there was a cessation of the disease after the equipage and personal effects of the men were packed up on leaving the home station, and a recurrence of the disease fourteen days after arrival at their destination, after the unpacking of these probably infected articles, and this leads me to the important conclusion that an organization infected with typhoid fever should not, except in case of grave military necessity, be sent on an expedition of any kind until after segregation in a quarantine camp, provided with the necessary means of sterilizing all appurtenances, and allowing sufficient time to elapse to insure an absolute eradication of the disease.

MALARIA.

The admission and noneffective rates for these diseases—72.13 and 1.80—were considerably higher than the figures for the United States—50.27 and 1.12—but much lower than for American troops in the Philippine Islands—304.20 and 6.39.

DYSENTERY.

The admission rate for dysentery was 9.80 as compared with 5.96 for the United States and 43.86 for the Philippine Islands. There were no deaths from dysentery in Cuba.

YELLOW FEVER.

No cases occurred among enlisted men; 1 officer contracted the disease.

VENEREAL DISEASES.

The admission rate for venereal diseases—164.74—was higher than that in the United States—158.91; but the noneffective rate—7.18—was lower than that of the United States—10.90.

ALCOHOLISM.

Alcoholism caused an admission rate of 32.06, almost exactly the same as that in the United States—32.27.

DIARRHEA AND ENTERITIS.

This class of diseases gave an admission rate larger than that of the United States and Philippine Islands taken together; there were, however, no deaths from this cause.

SANITATION.

The latest report of the chief surgeon shows 19 stations garrisoned by the army. Sanitary conditions are generally fairly good.

It has been found necessary to sterilize the drinking water at nearly all posts.

At 6 stations excreta are disposed of by water carriage; the dry-earth system is used at 4 places, the McCall incinerator at 3, and the Reed trough system at 2 others.

PORTO RICO.

There has been no change in the garrison or the stations on this island since last report.

The admission rate of 1,505.51 was slightly higher than that for the previous year, the discharge rate of 10.99 was a little more than half that of 1905, while the death rate of 16.48 was three times as great as that for the preceding year. The noneffective rate for the year showed an improvement compared with 1905, the respective rates being 47.92 and 57.84. The total rates were all higher for Porto Rican than for Filipino troops:

The admission rate for malarial fevers increased to 259.19 per 1,000 for the year, compared with 178.19 and 120.37, the correspond-

ing rates for the previous year and for 1904, respectively. Typhoid fever also made its appearance during the past year and contributed 9 cases and 2 deaths to the total sick rates. Dysentery increased from the low admisison rate of 3.64 for 1905 to 18.38 for the past year. There were no admissions for tuberculosis during the year, while the rate for venereal affections improved considerably.

Excluding venereal diseases, alcoholism, and injuries, the highest admission rate was recorded in November and the lowest in February.

RECRUITING.

The statement following shows the number of Porto Ricans who applied for enlistment during the year 1906, the number accepted, the number rejected on primary examination, and the number who declined enlistment, with ratios per 1,000.

	Number.	Ratio per 1,000 examined.
Examined	495	1,000.00
Accepted	382	771.72
By first enlistment	188	379.80
Other enlistments	194	391.92
Rejected on primary examination	105	212.12
Declined	8	16.16

The proportion of recruits accepted was 771.72 per 1,000, a proportion but slightly higher than that for either white or colored American applicants for enlistment.

The proportion who enlisted at the age of 24 and under was 51.31 per cent, compared with 56.94 per cent and 27.69 per cent for the American white and colored recruits respectively. Four Porto Ricans under 20 years of age were enlisted, while 21 and 23 appear to be the ages at which the largest number were accepted.

The height of the highest proportion of accepted Porto Rican recruits, 25.39 per cent, was 5 feet 6 inches, being 1 inch below the height at which the largest proportion of both white and colored recruits were enlisted. The proportion of those approved under 5 feet 4 inches was 3.40 per cent, while but 2 of the accepted Porto Ricans were 6 feet and over.

The weights of 19.63 per cent, the highest proportion of accepted Porto Ricans at all ages, were between 125 and 129 pounds, while the highest proportion of accepted candidates among the white and colored American troops were between 135 to 139 and 140 to 144, respectively.

Over one-fourth of the 382 Porto Ricans accepted for service during the year showed a chest measurement of 33 inches. Below 33 inches the figures were 58.64 per cent, compared with 33.86 per cent for American white troops and 25.81 per cent for American colored troops. Porto Rican troops having a chest measurement above 34 inches constitute 21.73 per cent of the whole, compared with 23.35 per cent and 31.45 per cent, respectively, for American white and colored accepted applicants for enlistment.

The principal causes of rejection per 1,000 examined in order of their relative importance were defects of development, 361.90; venereal diseases, 142.86; heart disease, 95.24, and defective vision, 66.67.

HAWAII.

The admission, discharge for disability, death, and constantly noneffective rates, 1,008.62, 20.16, 8.06, and 49.93, show an increase over the corresponding rates for 1905, which were 1,000, 5.68, 0.00, and 39.73.

There was 1 admission for typhoid fever and 2 for malaria. Twenty-eight per cent of all admissions and 42 per cent of all noneffectiveness from disease were caused by venereal affections.

HEALTH OF TROOPS IN THE PHILIPPINE ISLANDS.

AMERICAN TROOPS.

All the rates were higher than for 1905; this for disease as well as for external causes.

The mean strength of the command was 12,380, against 11,057 for 1905. The admission rate for all causes was 1,700.32, compared with 1,599.72 per 1,000 of strength for the preceding year. The increase in the death and discharge rates is partly accounted for by the fact that in the statistics for this year the deaths and discharges which occurred in the United States of soldiers invalided home from the Philippine Islands were for the first time charged to the country where their organizations were serving. The increase in the other rates were largely due to an epidemic of dengue and a large increase in the rates for intestinal parasites and parasitic diseases of the skin; there were, however, increases also in the rates for measles and other eruptive fevers and in those for malarial and typhoid fevers.

The rates for white troops serving in the islands exceeded those for colored troops under similar conditions in all cases except in the point of admission to sick report, the respective admission, discharge, death, and noneffective rates being 1,675.18, 11.86, 9.42, and 63.66 for white troops and 2,170.11, 2.71, 4.07, and 57.53 for the colored soldiers. These figures seem to sustain the view that colored troops are more resistant than are white soldiers to the injurious effects of tropical service.

For disease the principal causes of admission with rates for each were venereal, 310.34; malarial fevers, 304.20; diarrhea and enteritis, 130.69; dengue, 88.77; and dysentery, 43.86. The principal causes of noneffectiveness were venereal, 22.04; malarial, 6.39; dysentery, 3.22; diarrhea and enteritis, 2.27; and dengue, 1.69, and the principal causes of death, tuberculosis, 0.79; malarial fevers, 0.55; dysentery, 0.32; pneumonia, 0.32, and Asiatic cholera, 0.24.

Under external causes there were 8 admissions for sunstroke without a death and 14 deaths from drowning.

PREVALENCE OF SPECIAL DISEASES.

TYPHOID FEVER.

The admission rate for this disease, 3.88, is increasing, being larger than for 1905, and more than twice as great as for 1904; there were, however, no deaths. Quite a severe outbreak occurred at Iloilo, giving a total of 15 cases in a mean strength of 208.

UNDETERMINED FEVERS.

The reduction in the admission rate for this class of diseases from 35.27 in 1905, to 8.97 during the past year was very gratifying as an evidence of greater accuracy of diagnosis, and accounts, in part, at least for the increase in typhoid and malarial fevers.

MALARIA.

The admission rate (304.20) and the noneffective rate (6.39) again showed a marked increase over those for the preceding year, when the rates were 261.55 and 5.22, respectively; the death rate was a little lower. The number of undetermined infections was greatly reduced, from 1,885 to 189.

MEASLES.

Measles and other eruptive fevers, except smallpox, showed a marked increase for the year.

ASIATIC CHOLERA.

There were 7 admissions with 3 deaths from this cause.

DYSENTERY.

There was a gratifying reduction in all the rates for dysentery as compared with 1905, the admission rates for the two years were 63.67 and 43.86, respectively; the amebic form occurred about seven times as often as the bacillary disease.

DENGUE.

This disease caused over a thousand admissions.

TUBERCULOSIS.

The admission rate, 5.49, was slightly lower than for last year.

VENEREAL DISEASES.

The admission, 310.34, and noneffective rates, 22.04, were both higher than for the year 1905.

ALCOHOLISM.

The rates for this disease were about the same as for last year.

INSANITY.

A slight increase was noted as compared with the rates for last year.

FILARIASIS.

There was 1 case of lymphatic varix discharged for disability during the year.

YAWS.

The first case of yaws occurring in an American soldier was reported March 18, 1907, by Capt. B. S. Dutcher, assistant surgeon, from Camp Bumpus, Leyte, P. I. The case was that of a musician of the First Infantry, and was probably contracted from the natives of the town, who have since been discovered to be quite extensively infected with this disease. Stained sections from one of the yaws removed from the soldier shows the presence of *Treponema pertenue* in enormous numbers.

DIARRHEA AND ENTERITIS.

The figures for this class of diseases were slightly better than for 1905.

For all causes the Department of Luzon had the highest admission and noneffective rates, and the Department of Mindanao the highest death rate; the lowest admission rate was noted in the Department of Mindanao and the lowest death rate in the Department of Luzon.

Excluding injuries, venereal diseases, and alcoholism, the highest admission and death rates were recorded in the Department of Luzon and Department of the Visayas respectively; the Department of Luzon also showed the highest noneffective rate for the year; on the other hand, the Department of Mindanao showed the lowest admission rate, the Department of Luzon the lowest death rate, and the Department of the Visayas the lowest noneffective rate.

By islands, Cebu had the highest and Mindanao the lowest admission rate from all causes; Jolo the highest and Samar the lowest death rate, and Panay the highest and Samar the lowest noneffective rate for the year. Excluding injuries, venereal diseases, and alcoholism Cebu had the highest and Samar the lowest admission rate; Guimaras the highest and Luzon the lowest death rate, and Panay the highest and Samar the lowest noneffective rate for the year.

Taking the largest posts as shown in International Table No. V, the post having the highest admission rate was Warwick Barracks, with Camp Stotsenburg next, and Camp Downes third; the lowest rate was noted at Camp Overton, Mindanao. The highest death rate was reported from Jolo, the next highest from Camp Bumpus; there was no death at Camp Wilhelm during the year.

The admission rate for cholera was highest in July, for typhoid and malarial fevers the rates were highest in August. Dysentery was most prevalent in October, diarrhea in June, and tuberculosis in March.

Excluding injuries, venereal diseases, and alcoholism, the highest admission, death, and noneffective rates were noted in August, March, and April, respectively, and the lowest admission, death, and noneffective rates in February, November, and February.

INFLUENCE OF AGE.

The highest admission rate occurred in soldiers 19 years old and under, the lowest in those between the ages of 45 and 49, the highest discharge and noneffective rates in those 19 and under; the lowest noneffective rate in those 45 to 49; the highest death rate was recorded for those soldiers between the ages of 40 and 44, and the lowest among those 20 to 24 years of age.

INFLUENCE OF LENGTH OF SERVICE.

The highest admission and noneffective rates were reported for soldiers of less than one year's service and the highest death rate for those who had served ten years and over. The lowest noneffective rate occurred in soldiers who had between three and four years of army duty.

INVALIDED HOME.

The number of enlisted men invalided home from the Philippine Islands in 1906 was 360, giving an invaliding ratio of 29.08 per thousand, compared with 29.03 for the previous year.

Diarrheal diseases, including dysentery, diarrhea, and sprue; tuberculosis, insanity, and venereal diseases caused over 50 per cent of the total invaliding.

Of the total sent home 3.33 per cent died, 33.33 per cent were discharged on surgeon's certificate of disability, 21.67 per cent were returned to duty, and 30.56 per cent were remaining at the end of the year.

FILIPINO TROOPS.

With a mean strength of 4,759 there were 1,316.03 admissions per 1,000 to sick report, the rate being slightly higher than that for the year 1905. The death and discharge rates of 11.51 and 10.12 for the year also showed an increase compared with 10.71 and 4.24, the corresponding rates for the preceding year. The noneffective rate was about the same as for 1905.

The following table shows the movement of sick for the year:

	From all causes.		Excluding injuries, venereal diseases, and alcoholism.	
	Total.	In hospital.	Total.	In hospital.
Ratios per 1,000 of mean strength:				
Admissions to sick report	1,316.03	850.81	1,109.69	.....
Discharges on surgeon's certificate of disability	10.12	.....	9.13	.....
Deaths	11.51	.....	8.93	.....
Total losses	21.63	.....	18.06	.....
Noneffective from sickness	34.79	26.88	27.68	21.92
Average number of days lost:				
For each soldier	12.70	9.81	10.10	8.00
For each case	9.65	11.53	9.11	.....

For disease the principal causes of admission with ratios for each were malaria, 393.15; diarrhea and enteritis, 95.40; bronchitis, 67.03; venereal diseases, 63.25; and beriberi, 36.98. The corresponding ratios for the previous year were 572.70, 61.92, 45.64, 59.78, and 35.93, the rate for malaria being a decided improvement over the rate for those diseases in 1905.

A special report received from Assistant Surgeon Cole, on duty in the Philippine Islands, would seem to indicate that uncinariasis is exceedingly prevalent among the natives of the Philippines. This infection was found present in over 50 per cent of the men examined in one company of Philippine Scouts. According to Doctor Cole's experience the New World hook-worm, *Uncinaria americana*, is the variety usually found.

The death rate for tuberculosis was much lower than for 1905, the respective rates being 0.60 and 1.41. The death rate from beriberi increased slightly for the year, 1.79, compared with 1.21, the corresponding rate for the previous year.

Tuberculosis alone caused over 50 per cent of all discharges for disease.

Excluding venereal diseases, alcoholism, and injuries, which were practically independent of seasonal influences, the highest admission rate was recorded in July, the lowest in February; the highest death rate in October, the lowest in May and June; the highest noneffective rate in September, the lowest in May.

Three enlisted men were killed in action and 3 wounded. All the killed and 2 of the wounded were by gunshot. The wounded recovered. One officer of scouts was killed in action by gunshot wound of head.

SURGICAL OPERATIONS.

One hundred and twenty-one surgical operations were performed upon Philippine scouts, of which 116 were successful. There were 4 deaths.

RECRUITING.

The following table shows the results obtained from the examination of Filipino applicants for enlistment during the year in both absolute and proportional numbers:

	Number.	Ratio per 1,000 examined.
Examined	600	1,000.00
Accepted	527	878.33
By first enlistment	314	523.33
Other enlistments	213	355.00
Rejected on primary examination	72	120.00
Declined	1	1.67

The number of recruits enlisted during the last year was slightly more than a third of the number enlisted in 1905, and the proportion accepted was 878.33 per thousand examined, compared with 900.50 for the previous year.

The proportion 24 years of age and under who enlisted was 59.58 per cent, 1.91 per cent of which were under 20 years of age when accepted for service, while 21 is the age at which the largest number were accepted.

Of the accepted recruits 48.96 per cent were under 5 feet 4 inches, compared with 55.03 per cent for the previous year, and 1.90 per cent were under 5 feet.

The weight of 51.80 per cent of accepted recruits was less than 120 pounds, while only 4 reached 150 pounds or over; the average weight, however, was slightly greater than for the previous year.

The average chest measurement of accepted applicants shows improvement compared with the previous year; 32.26 per cent of the recruits had a chest measurement under 31 inches compared with 47.86 per cent for last year, while 8.54 per cent had a chest measurement of 34 inches and over compared with 4.72 per cent for the previous year.

In the following statement the causes of rejection among Filipino candidates for enlistment during the year 1906, with ratios per 1,000 rejected are shown:

Defects of development caused 111.11 rejections per 1,000 compared with 315.79 for the previous year. There was but one rejection

on account of venereal disease. Heart disease as a cause of rejection was slightly increased compared with the figure for the previous year, as was also defective vision. The other rates for causes of rejection were not materially changed for the year.

Causes of rejection.	Number rejected.	Ratio per 1,000.
1. Heart disease	10	138.89
2. Defects of vision	9	125.00
3. Varicocele	8	111.11
4. Hernia	5	69.44
5. Diseases of the skin	5	69.44
6. Varicose veins	4	55.56
7. Tuberculosis	3	41.67
8. Underweight	3	41.67
9. Flat feet	3	41.67
10. Chest development insufficient	3	41.67
11. Hemorrhoids	2	27.78
12. Defective teeth	2	27.78
13. Venereal diseases	1	13.89
14. General diseases, except as shown in detail	1	13.89
15. Defects of hearing	1	13.89
16. Diseases of the genito-urinary system (nonvenereal)	1	13.89
17. Curvature of spine	1	13.89
18. Diseases of the organs of locomotion, except spinal curvature	1	13.89
19. Overweight and obesity	1	13.89
20. Defects of development, except as shown in detail	1	13.89
21. Causes not physical	7	97.22
Total	72	1,000.00

SANITATION.

DEPARTMENT OF LUZON.

The successive concentrations of troops in this department in the larger garrisons, with the improved condition of quarters, cooking, water supply, and drainage, and the betterment of the quality of supplies, on account of the greater accessibility of posts and better transportation facilities, have all tended to an improvement of service conditions. There was no active field service in this department during the year, but in the months of March, April, and May all of the troops made a number of practice marches under active service conditions.

During these months there was an increase in the sick rate; upon suspension of these marches, however, the sick rate declined.

The malarial situation at Camp Stotsenburg assumed such a serious aspect at times during the year as to occasion doubts concerning the advisability of further continuing this place as a garrisoned post. The conclusions of the board appointed by the division commander to investigate and report upon the prevalence of malarial diseases at this station, with a view to determining the cause and recommending measures for prevention, were as follows:

That sanitary regulations issued by the post commander of Camp Stotsenburg were adequate and sufficient. That these regulations had been imperfectly carried out in that the bamboo joints in the frames of the new buildings were, in many instances, inefficiently or improperly bored; the prophylactic administration of quinine was not thoroughly carried out; the pool of water under the quartermaster's storehouse was not promptly drained; mosquito nets were not issued to the Second Infantry for some days after they went into camp. The individual responsibility for these shortcomings can not be placed positively. The commanding officer appears to have issued prompt orders for the execution of the surgeon's sanitary recommendations, but there evidently was a marked lack of appreciation on the part of the junior line

officers of the necessity for these measures, and the sanitary officers failed to meet with that cooperation which is essential to success in matters of this kind. The board is of the opinion that it is quite possible to virtually eliminate malaria from this station, provided that all sanitary recommendations are strictly and conscientiously carried out; that the garrison is not increased; that all barracks and quarters built of bamboo and nipa are removed as soon as practicable; that the present reservation is increased by extending its limits to the Bamban River on the north, the railroad on the east, the large creek on the south, and to the west to the watershed of all the streams running through the reservation; this extension to be followed by the removal of all native barrios existing within said limits. The board is convinced that the sanitary conditions at Camp Stotsenburg are not of such gravity as to justify the abandonment of the post.

Speaking in a general way, the monthly sanitary reports show the sanitary condition in this department to be very good. All troops in the department are quartered in buildings with the single exception of one company of scouts. The question of quarters is, as a rule, quite satisfactory at the more permanent posts.

The water-carriage system for the disposal of liquid wastes is in successful operation at Fort William McKinley, Cuartel de España, and Camp McGrath. At all other posts the dry-earth system of closets is used. The contents of the dry-earth pans at these posts and the solid and miscellaneous wastes from all posts are collected daily and carried to varying distances from the post and either burned or buried. This manner of disposal is at best but an expedient and is a constant source of pollution to neighboring streams, barrios, and camps. At the coast stations and at some of the posts situated on navigable streams the wastes are disposed of by dumping into the sea or river.

Prior to the receipt of General Orders, No. 106, War Department, 1906, numerous complaints were made by the surgeons concerning the nonissue of toilet paper to those posts not provided with water-closets, it being almost impossible to cover the excreta in the pans when stiff paper, old newspapers, etc., were used, without requiring large quantities of earth.

The water supply in most instances is satisfactory throughout the department. The source of supply and methods of purification at the different posts are as follows: From rivers, Camps Gregg and Wilhelm, Daet, Samal, and San Mateo, of which the waters of the first two stations named are distilled before use, and of the latter three boiled before use. The spring water used at Camps Eldridge and McGrath and Daraga is rendered safe by distillation and at Balayan, Boac, Infanta, and Naic by boiling. Surface wells are in use at Camp Wallace, Atimonan, Calapan, and Imus. Camp Wallace and Imus have distilling plants. At the other two posts the water is boiled before use. The water used at Camp Stotsenburg, Fort Wm. McKinley, Nasugbu, San Isidro, and Santo Tomas is obtained from deep wells. It is distilled at Stotsenburg before use. McKinley's supply is considered sufficiently safe to allow of its consumption without sterilization, while at the other posts the water is boiled before use.

There were a few reports made during the year in which fault was found with the khaki clothes issued, noting that it was too heavy in weight and that it did not hold its color. Otherwise the quality has been satisfactory and supply ample.

DEPARTMENT OF MINDANAO.

The sanitary condition of the department at large is constantly improving. The tents used at the temporary posts have been replaced with grass and bamboo houses. Water is distilled for drinking purposes at the larger posts, while boiling is resorted to at a few stations in the department. There is river, lake, or sea bathing at all the posts, and most of them are provided with shower baths.

The dry-earth treatment of excreta continues in use. The native scavengers have been closely inspected, and there has been less nuisance created than formerly. Slops and garbage are carted away daily and disposed of in a satisfactory manner.

Zamboanga.—Malarial fever is practically never contracted by the American soldier at this station. The sanitary condition of the post is generally good. Water for drinking is distilled. Wastes are hauled away in a sanitary cart and dumped into the sea. This method is satisfactory when properly carried out. The post is an unusually healthy place, and the incidence of sickness of moment is very small.

Jolo.—The sanitary conditions at this post during the year have been very good. Bathing facilities are adequate. The water supply is sufficient in quantity and satisfactory in quality, distilled water being used for drinking purposes. The enlisted men of the command are examined twice a month for venereal disease and are promptly isolated and treated when found to be infected. This examination has been attended with the most gratifying results, and almost all cases of venereal disease treated during the past six months originated elsewhere. The results of anti-mosquito measures have been a decrease in the number of mosquitoes with a corresponding decrease in the number of cases of malarial fevers.

Parang.—The sanitary condition of the post has steadily improved under the consistent and energetic efforts of the post authorities to improve the poor surface drainage. Bathing facilities are limited. For drinking purposes distilled water is used. The food is excellent, but practically limited to the ration, as fresh vegetables and fruits are scarce and costly at this station.

Malabang.—The sanitary condition of the post during the year has been fairly good. The barracks and quarters are quite defective. Efforts have been made by the post authorities to improve the condition, but as yet no appropriation sufficiently adequate for the repairs, etc., has been secured. Bathing facilities are excellent, both salt and fresh water being accessible. The water supply obtained from a spring in the bank of the Malabang River is ample and of excellent quality. For drinking purposes, however, distilled water is provided. Dry earth closets are in use.

Camp Keithley.—Sanitary condition very good. Organization commanders are required to submit a report twice a month showing the progress of the work to prevent mosquito breeding. The intestinal affections at this post are probably caused by field service. The command is inspected for venereal diseases twice a month. The buildings are very poor. The new sets of barracks have wooden floors for the kitchen and dining room. A new bath house with showers has been provided for the men. The water supply is ample and of good quality. The disposal of wastes is unsatisfactory. Dry earth closets are used, but they are not fly-proof by any means, probably on

account of lack of funds. The wastes are deposited in a ravine, as it is not advisable to permit the use of the river for this purpose.

Camp Vicars.—The sanitary condition is good. The quarters for officers and enlisted men need constant repair. Bathing facilities consist of extemporized shower baths. The water supply is ample in the wet season, but as it is obtained from a spring it is of questionable quality. All drinking water is boiled and filtered. Mosquito bars are used by the entire command.

Camp Overton.—The sanitary condition has been generally satisfactory during the year. Bathing facilities are good. Distilled water is used for drinking purposes, but general supply is limited. The post seems to be unusually healthful for these islands, due principally, no doubt, to the fact that it is built on the sand and stagnant water is nearly unknown.

Fort Pikit.—The sanitary conditions have been good throughout the year.

DEPARTMENT OF THE VISAYAS.

During the last half of the year the troops in this department have had a great deal of field service, and the sick report shows an increase during this period, which is due partly to the conditions of service and partly to an increased command. Recommendations on sanitary reports have been, as a rule, regarding minor matters of post sanitation, and have been attended to by immediate commanders as far as practicable.

PREVALENCE OF DISEASE, BY RACES.

In making this comparison it is to be borne in mind that the native troops were serving in their own country under conditions natural to them but inimical to our troops, and that American soldiers excused from any portion of their military duty, no matter how trivial the cause, are placed on sick report, while this is not the case with the Philippine scouts.

As was the case last year all the rates, except the death rate, were considerably lower for Filipino than for American troops; the death rate from all causes and from disease only, was, however, much higher among the Filipinos. An undue prevalence of cholera and beriberi partially explains the higher death rate among the Filipinos.

The diseases more prevalent among the American troops, with the admission rates per 1,000 for each, are shown in the following table:

Disease.	American troops.			Filipino troops.
	Total.	White.	Colored.	
Venereal diseases	310.34	309.17	322.27	63.25
Diarrhea, including enteritis	130.69	130.63	131.96	95.40
Dengue	88.77	85.52	149.44	15.55
Dysentery	43.86	41.61	85.86	20.38
Dyspepsia	35.46	33.79	66.77	27.53
Alcoholism	30.37	31.57	7.95	.63
Articular rheumatism, acute and chronic	11.39	11.15	15.90	5.46
Diseases of the liver	6.54	6.73	3.18	1.89
Appendicitis	5.41	5.36	6.36	1.26
Measles	5.01	5.28	.....	.63
Typhoid fever	3.88	4.08	.....	.84
Heart disease, organic, including endocarditis and pericarditis	2.26	2.22	3.18	2.10
Insanity	2.02	2.13	.....	.63

The diseases more prevalent among the Filipino troops are shown in the next statement.

Disease.	Filipino troops.	American troops.		
		Total.	White.	Colored.
Malarial fevers	393.15	304.20	318.10	44.52
Bronchitis, acute and chronic	67.03	27.30	25.95	52.46
Abscess, acute	44.76	35.95	35.06	52.47
Constipation	44.76	22.54	20.68	57.24
Dhobie itch	43.08	27.54	24.97	76.31
Beriberi	36.98	.08	.09	.....
Fevers, undetermined	21.43	8.97	8.68	14.31
Conjunctivitis, acute	16.18	7.92	7.74	11.13
Tuberculosis	9.88	5.49	5.36	7.95
Cholera, Asiatic	2.73	.57	.60	.....
Pneumonia	1.68	.48	.51	.....

TROOPS ON TRANSPORTS.

During the year 1906, 4,886 enlisted men left the United States on transports for passage to foreign stations and 5,900 returned from foreign stations. The sanitary condition of Government transports is generally satisfactory.

The recommendation of this office that the transportation of sick and wounded on a given transport should be restricted to the known capacity of the hospital wards, and requiring the excess over that number to wait for the next transport, with the probability of more favorable conditions, should be strictly adhered to.

MEDICAL OFFICERS, UNITED STATES ARMY.

The number of commissioned officers of the medical department provided for by existing law is 323—one additional major having been allowed by the act of March 2, 1907; the number in service June 30, 1907, was 302, leaving 21 vacancies at that date.

The following table exhibits the loss of medical officers during the fiscal year:

	Colonels.	Lieutenant colonels.	Majors.	Captains.	First lieutenants.	Total.
Retired from active service	1	.....	2	2	.....	5
Resigned	.....	.....	.....	3	1	4
Died	.....	.....	1	.....	.....	1
Honorably discharged	.....	.....	.....	.....	1	1
Aggregate	1	.....	3	5	2	11

During the year the following promotions were made: One lieutenant-colonel, deputy surgeon-general, to be colonel, assistant surgeon-general; 1 major, surgeon, to be lieutenant-colonel, deputy surgeon-general; 4 captains, assistant surgeons, to be majors, surgeons; 1 first lieutenant, assistant surgeon, to be major, surgeon, under provisions of the act of March 2, 1907, and 31 first lieutenants were advanced to the rank of captain after five years' service, in accordance with existing law. After completion of a full course of instruction at the Army Medical School and passing the qualifying examination, ten applicants were appointed assistant surgeons with the rank of first lieutenant.

Two captains, assistant surgeons, were examined for promotion, one of whom was found not qualified professionally and suspended from promotion for one year, and one was found fully qualified for promotion to surgeon, with the rank of major. Thirty-four first

lieutenants, assistant surgeons, were examined for advancement to the rank of captain, of whom 31 were found fully qualified, 1 was found physically disqualified and retired from active service as captain, and 2 were found not professionally qualified and suspended from advancement for one year from the date they would have been entitled to promotion had they been found qualified. One first lieutenant was reexamined for advancement to the rank of captain; he was found not professionally qualified and honorably discharged from service.

Preliminary examinations of applicants for appointment in the medical corps of the army were held at various military posts on July 31, 1906, and April 29, 1907. These examinations are summarized as follows:

Place of examination.	Invited.	Declined to appear.	Failed to appear.	Preliminary requirements not complied with.	Examined.	Physically disqualified.	Withdrew.	Rejected.	Qualified.
Examination held July 31, 1906.									
Washington, D. C. (Army General Hospital)	12		1		11	5		6	
Fort Sheridan, Ill	7		2		5	3		1	1
Fort Jay, N. Y	5		2		3	1		2	
Fort Thomas, Ky	4		3		1	1			
Fort Snelling, Minn	4	1	1		2			1	1
Fort Niagara, N. Y	4	1	1		2	1		1	
Fort Leavenworth, Kans	4		1		3	1	2		
Jefferson Barracks, Mo	3				3		1	2	
Fort Adams, R. I	3				3			2	1
Vancouver Barracks, Wash	3		1		2		1	1	
Columbus Barracks, Ohio	2		1		1			1	
Fort Des Moines, Iowa	2				2	1	1		
Hot Springs, Ark	2				2			1	1
Madison Barracks, N. Y	2		1		1				1
Austin, Tex	2				2	2			
Fort Oglethorpe, Ga	1				1			1	
Fort Bayard, N. Mex	1				1			1	
Fort Worden, Wash	1				1				1
Ancon, Canal Zone	1				1			1	
Total	63	2	14		47	15	5	21	6
Examination held Apr. 29, 1907.									
Washington, D. C. (Army General Hospital)	4				4	3			1
Fort Sheridan, Ill	4		2		2	1	1		
Fort Leavenworth, Kans	4		2		2	1			1
Jefferson Barracks, Mo	3		1		2	1			1
Fort Riley, Kans	2		1		1			1	
Fort Porter, N. Y	2			1	1			1	
Vancouver Barracks, Wash	2				2		1		1
Fort Ethan Allen, Vt	1				1			1	
Fort Rosecrans, Cal	1				1			1	
Madison Barracks, N. Y	1		1						
Fort Snelling, Minn	1				1	1			
Fort Thomas, Ky	1				1	1			
Fort Reno, Okla	1	1							
Columbus Barracks, Ohio	1				1				1
Fort Monroe, Va	1				1	1			
Fort D. A. Russell, Wyo	1				1				1
Fort Logan, Colo	1	1							
Ancon, Canal Zone	1				1				1
Fort Jay, N. Y	1				1			1	
Philippines	1				1			1	
Total	34	2	7	1	24	9	2	6	7

Of the 6 successful applicants in the examination held July 31, 1906, 4 were ordered to the Army Medical School October 1, 1906, and after a full course of instruction were graduated May 31, 1907; 1 attended the school as a militia officer, and was graduated in 1905; 1 declined to accept contract for service at the school. The qualified applicants in the examination of April 29, 1907, will be ordered to the school at the commencement of the next session.

The bill to increase the efficiency of the medical department of the army, after passage by the Senate, again failed to come to a vote in the House of Representatives, although its passage has been urged by the President of the United States in his special message to Congress, by Secretaries Root and Taft, by the Chief of Staff, by the General Staff, and by this office.

The vacancies in the lower grades created by the reorganization bill of 1901 have not been filled; in fact, the number is now greater by three (including one pending and effective July 3, 1907) than at the time of the last report.

The number of applicants for admission to the medical corps has steadily fallen off and at the examination held in April, 1907, only 24 appeared for examination. No applications were received from the medical centers of the country although the hospitals in any one of the larger cities could furnish a sufficient number of well-qualified young physicians to supply our needs if proper inducements could be offered. The lack of a sufficient number of medical officers has become very apparent since troops were sent to Cuba and there are now not enough medical officers left in the country to supply the positions that can not be filled except by commissioned medical officers (recruiting service, larger military posts, examining and retiring boards). The necessity for a sufficient number of officers trained in military sanitation is recognized by all who have the welfare and efficiency of the army at heart. That the value of such training is appreciated is shown by the detail of medical officers of the army to take charge of the sanitation of Cuba and the Panama Canal Zone.

The Government has been put to considerable expense in transferring patients to general hospitals and to larger posts where experienced medical officers are stationed, because many of the contract surgeons employed at the smaller stations were not sufficiently experienced to undertake the treatment of serious and complicated cases.

In the leading foreign armies the proportion of medical officers is 50 per cent greater than in ours, although they have a large reserve corps of trained medical officers to draw upon in case of war or other emergencies. This office is constantly embarrassed by demands for medical officers that can not be supplied, and little can be done in the way of preparation for great emergencies with a personnel that is not sufficient to meet the little emergencies that occur in time of peace.

In consequence of this inadequate supply of medical officers, it is necessary to employ a large number of civilian physicians, under contract, men without military training, with but little knowledge of the special sanitary duties of medical officers in the field, and whose professional efficiency is below that demanded of the commissioned medical officer.

The defects in the organization of the medical department, as indicated above, can only be remedied by legislation.

CONTRACT SURGEONS, UNITED STATES ARMY.

There were 166 contract surgeons in service at the close of the fiscal year ended June 30, 1906. During the past fiscal year contracts were made with 67 physicians, while 55 contracts were annulled, and

1 was terminated by death, leaving 177 in service June 30, 1907. Of the 67 contracts made, 3 were merely renewals for definite terms of contracts already in force; 10 were with candidates for commission as medical officers, who were given the status of contract surgeons while pursuing a course of study at the Army Medical School; and 17 were with those who had previously served satisfactorily as contract surgeons or volunteer medical officers.

Contract Surgeon James E. Shellenberger, U. S. Army, died February 4, 1907, at Cincinnati, Ohio, of heart disease, in the sixty-first year of his age.

CONTRACT DENTAL SURGEONS, UNITED STATES ARMY.

Thirty dental surgeons are allowed by the act of Congress approved February 2, 1901, and this number has been continuously employed under contract during the fiscal year ended June 30, 1907. Two contracts were annulled, and the vacancies thus created were immediately filled from the register of eligible candidates. Thirteen dental surgeons are serving in the Philippine Islands, 2 in Cuba, and 15 in the United States.

In the Philippine Islands 875.09 cases per 1,000 of mean strength were admitted for dental treatment and 895.51 operations per 1,000 were performed on the teeth, compared with 570.26 and 585.80, the corresponding figures for the United States proper.

The number of teeth treated for dental caries in white troops serving in the United States was 368.51 per 1,000 men, compared with 193.07 for the negro troops, both figures showing an improvement over 1905 in the number of teeth involved. In the Philippine Islands the number of teeth treated in white troops was 773.13, in colored troops 1,015.90, and in the native scouts 31.52 per 1,000.

PRESENTATION OF MEDAL OF HONOR.

Under the Executive order of September 20, 1905, Maj. Paul F. Straub, surgeon, U. S. Army, was presented with a medal of honor by the President of the United States, October 6, 1906. The presentation took place in the President's private office, and on account of the notable character of Major Straub's services, was made a brilliant ceremony. Those present included the Secretary of War, the Assistant Secretary of War, the Chief of Staff, the Surgeons-General of the Army and Navy, and officers of the medical department and general staff.

The Chief of Staff formally presented Major Straub to the President, detailing the conspicuous gallantry and the specific acts entitling the recipient to the distinguished honor about to be conferred.

Upon presenting the medal to Major Straub the President said:

I give you the reward which more than any other in American life should be coveted by every man in the country. It is the nearest thing to a patent of nobility that this nation has in its power to bestow. Every man who has worthily won it has rendered distinguished services, and is entitled to the regard of all our people. I congratulate you on having worthily won this medal of honor.

ARMY MEDICAL SCHOOL.

The eleventh session began October 1, 1906, and closed May 31, 1907.

The number of student candidates admitted was 10, and of militia medical officers 1. One student medical officer also attended.

The 10 student candidates completed the course; 9 passed the graduating examination and were awarded certificates of proficiency. The militia medical officer failed to graduate.

The table following shows the subjects taught, the hours of instruction in each subject, and the names of the instructors:

No.	No. of hours.	Subject.	Instructor.	Valuation.	
				Maximum.	Minimum.
1	104	Duties of medical officers, medical department administration, and customs of the service.	Maj. W. H. Arthur and Capt. B. K. Ashford.	1,000	800
2	280	Clinical microscopy and bacteriology	Maj. J. Carroll and Capt. F. F. Russell.	900	720
3	20	Military hygiene	Col. V. Havard	800	640
4	22	Military surgery	Maj. W. C. Borden	800	640
5	30	Military and tropical medicine	Maj. W. D. McCaw	800	640
6	170	Sanitary chemistry	Capt. C. R. Darnall	600	480
7	93	Hospital corps drill and field work	Capt. B. K. Ashford	500	400
8	48	Operative surgery	Capt. C. R. Darnall	400	320
9	68	Ophthalmology and optometry	Maj. J. D. Glennan	400	320
10	30	Roentgen ray work	Maj. W. C. Borden	300	240

The following additional instruction was also given:

Twenty-two hours in equitation at Fort Myer, by Capt. E. B. Cassatt.

A series of surgical clinics at the U. S. Army General Hospital, Washington Barracks, by Maj. W. C. Borden.

A series of six lectures on military law, by Maj. John B. Porter, Judge-Advocate-General's Department.

A series of lectures on mental diseases at the U. S. Government Hospital for the Insane, by Doctor Myer.

A series of lectures on animal parasites by Dr. Chas. W. Stiles, of the Public Health and Marine-Hospital Service.

A series of lectures and demonstrations on mosquitoes by Miss Clara Ludlow.

The conduct and deportment of the students, as well as their attention to duty and application, were at all times excellent, without exception.

The graduating examination began on May 13, and the closing exercises, including the award of diplomas by the Assistant Secretary of War, were held May 31.

One student candidate, Dr. Frederick S. Macy, graduated with honor, having attained a general average of more than 90 per cent, and to him the Hoff Memorial medal was awarded.

The qualifying examination for commission in the medical department began June 3, and closed June 12. The candidates consisted of the nine graduates of the school and one contract surgeon who had previously graduated. These were all found qualified, physically and mentally, and recommended for commission as assistant surgeons.

It is regretted that the number of students in this school has gradually decreased of late years, being smallest during the last session since 1900. The reasons for this decrease need not be discussed in this report. Obviously, the army medical service has lost much of its attraction for the bright young graduates from our best medical schools, and unless a remedy is soon supplied, by suitable legislation, it will be impossible to fill vacancies in the medical corps without lowering the present standard of examination, a resort which, if adopted, would leave us distinctly outclassed by the medical corps of the armies of all other civilized countries.

The faculty, after careful study of the subject, has recommended certain changes in the existing regulations governing the preliminary and final examinations. These recommendations are now under consideration by the general staff, and if accepted will, it is believed, remove some of the minor causes which may have deterred desirable young physicians and militia medical officers from applying for admission.

Steps are also being taken for the installation, in one of the rooms of the school building of the museum, of field medical equipment already approved by this office. Much useful and interesting material now inaccessible will thus be exhibited and classified and greatly contribute to the practical instruction of the students and medical officers.

HOSPITAL CORPS.

At date of last report, June 30, 1906, the strength of the hospital corps was as follows:

Sergeants, first class	290
Sergeants	267
Corporals	18
Privates, first class	1,467
Privates	1,154

Since then it has gained—

By enlistment	746
By transfer	875
Return from desertion	39

And lost during the same period—

By discharge by expiration of term of service	983
By discharge by order	182
By discharge, sentence general court-martial	54
By discharge, surgeon's certificate of disability	71
By transfer to line	22
By retirement	9
By death due to disease	8
By death due to suicide	3
By death due to drowning	2
By death due to wounds (accidental)	1
By desertion	202

Leaving in service, June 30, 1907—

Sergeants, first class	266
Sergeants	289
Corporals	20
Privates, first class	1,468
Privates	1,276

Total number of losses during the year ,1,537; gain, 1,660.

In March, 1907, 27 vacancies existed in the grade of sergeant, first class. All chief surgeons were consequently informed that a competitive examination for promotion to that grade would be held from June 10 to 15, 1907, and that questions for that purpose would be forwarded from this office in due time.

Applications from 64 sergeants serving at posts in the United States were received at this office, of whom 1 failed to meet the requirements for admission, 1 withdrew his application, and the recommendations for admission to the class in the case of 3 applicants were withdrawn by their superior officers on account of the reduction of the men from the grade of sergeant. The result of this examination will not be known until the replies from the Philippines Division are received.

Examinations for the position of sergeant are held under the immediate supervision of chief surgeons of the several military departments, unless candidates are serving at independent stations, when they are authorized by this office. About 103 appointments to this grade were made during the fiscal year ending June 30, 1907.

For various reasons it has always been held desirable to recruit the hospital corps by enlistments from civil life, but it has been found that this service is not entirely adequate to fill all the vacancies which frequently occur and to provide for emergency calls, especially in view of the existing advantageous labor conditions.

In view of these facts the gain by transfer from the line and from unassigned recruits still exceeds the enlistments direct for the corps by a trifle over 125, or by about 1¾ per cent.

For the good of the service and with a view to economy in transportation, the Acting Secretary of War, on March 27, 1907, upon request of the commanding general, Philippines Division, authorized that officer to transfer to the hospital corps from the line of the army of the regiments about to be returned to this country as many men as would provide for all vacancies that might occur in that division during the next six months.

Companies A and B being on duty in Cuba, and the urgent necessity for facilities to instruct hospital corps recruits and prepare them for service being evident, the Acting Secretary of War, on October 4, 1906, authorized the organization of Company C, Hospital Corps. The company moved into the barracks vacated by Company A, and the course of instruction has been carried on since its organization in conformity with the requirements of the Manual for the Medical Department.

Upon the recommendation of the chief surgeon, Philippines Division, and under authority from the War Department, Company D, Hospital Corps, was established at Fort William McKinley, Philippine Islands, in May of this year.

The following-named enlisted men of the hospital corps were mentioned in General Orders, No. 143, War Department, July 1, 1907, publishing a list of names of soldiers to whom certificates of merit had been awarded between July 1, 1905, and June 30, 1907, with the grounds of award:

Name, rank, and organization.	Date of award.	Date and place of occurrence.	Ground of award.
David, Leopold, sergeant, first class, Hospital Corps, U. S. Army (discharged Sept. 9, 1905).	Aug. 11, 1905	Journey from Circle City to Fort Yukon, Alaska, Mar. 4, 1905.	Distinguished service in voluntarily continuing his journey to relieve reported suffering and sickness among the natives of Fort Yukon, Alaska, after his only assistant had been left behind disabled, and in spite of severe suffering from frost, involving the loss of several of his toes. (1015255, M. S. O.)
Dougheney, James J., private, Hospital Corps (discharged Mar. 22, 1907).	Sept. 15, 1906	Bulusan, Luzon, P. I., Nov. 11, 1900.	Distinguished gallantry in action while a private, Company L, Forty-seventh U. S. Infantry Volunteers. (1162054, M. S. O.)
Gunn, James C., sergeant, first class, Hospital Corps, U. S. Army (discharged Dec. 6, 1906).	Mar. 10, 1906	Peruke-Utig, Jolo, P. I., May 3, 1905.	Distinguished service in action. (1071056, M. S. O.)
Paschal, Jesse J., private, Hospital Corps, U. S. Army.	Sept. 18, 1906	Fort Screven, Ga., July 4, 1906.	Voluntarily imperiled his own life in the rescue of fellow-soldiers, while a private, Fourteenth Company Coast Artillery Corps, U. S. Army. (1154727, M. S. O.)
Ryan, Frank T., private, Hospital Corps, U. S. Army.	Nov. 5, 1906	Fort Screven, Ga., July 4, 1906.	Voluntarily imperiled his own life in the rescue of fellow-soldiers. (1154698, M. S. O.)

COMPANY "A."

In compliance with telegraphic instructions from the War Department this company, consisting of 2 medical officers and 106 enlisted men, left Washington Barracks October 2, 1906, en route to Newport News, Va., to board transport to Cuba. The company supplied the necessary personnel of Field Hospital No. 2 of the Cuban Expeditionary Brigade and is now on duty at the base hospital, Army of Cuban Pacification, Camp Columbia, Cuba.

COMPANY "B."

The regular work of the company as prescribed by regulations was greatly interrupted during the year by the earthquake at San Francisco, the maneuvers at American Lake, and the expedition to Cuba—in all of which the company participated. While these events interfered with the regular course of instruction they served to make the year the most active as well as the most instructive and beneficial in the history of the company.

COMPANY "C."

Upon the departure of Company A for Cuba the organization of Company C, Hospital Corps, having been authorized by the Acting Secretary of War October 4, 1906, Capt. Bailey K. Ashford, medical eorps, was assigned to command the company. The company moved into the barracks vacated by Company A, and the course of instruction has been carried on since its organization so far as possible in conformity with the requirements of the Manual for the Medical Department.

ARMY NURSE CORPS (FEMALE).

At the beginning of the fiscal year there were 99 nurses in the corps, distributed as follows:

General hospital, Presidio of San Francisco, Cal	38
Detailed to duty on the transport Crook	2
General hospital, Fort Bayard, N. Mex	19
Division hospital, Manila, P. I	24
Zamboanga, Mindanao	5
Camp Keithley, Mindanao	5
Fort William McKinley, Rizal	4
Camp Bumpus, Leyte	2

During the past year there were 41 discharges. From among 368 applicants, 42 were selected for appointment; 36 of these were new to the work; 6 had had previous service. There has been no death among the nurses on active duty since 1900, and cases of serious illness have been rare.

In considering the ever-present difficulty of securing the class of women which the highest efficiency of this service demands, the rapidly increasing number and variety of positions open to nurses in civil life can not be ignored. The best graduates from the best nursing schools are eagerly sought, and the army can not hope to get its share of these unless it can offer at least that which is allowed in practically all civil positions—i. e., all necessary living expenses, without cost to the nurses. Under existing provisions for the army nurse corps quarters are provided, but the 30 cents per diem allowed for subsistence is wholly insufficient in localities where food is expensive or where but a few nurses are on duty.

There are at present 2 members of this corps who will in a few days enter upon the tenth year of an uninterrupted service. There are 16 more who have served continuously from four and one-half to eight and one-half years; 11 others who, having been once discharged and reappointed, have served from five to eight and three-fourth years. Under existing regulations the pay of nurses remains the same, whatever may have been their years of service.

It is recommended that—

1. The per diem allowance of 30 cents be increased to 50 cents.
2. In order to reward long and faithful service the pay of nurses be increased 10 per cent for each five years' service, the maximum to be attained after ten years' service.
3. Cumulative leave for a period not to exceed three months be granted them.
4. Provision be made for nurses' laundry work, either in the hospitals or by contract with outside parties.

UNITED STATES ARMY GENERAL HOSPITAL, PRESIDIO OF SAN FRANCISCO, CAL.

The buildings are in a condition of bad repair and wreckage as a result of the San Francisco earthquake. Repairs are being made. Two additional buildings, one for a recreation and exchange building and the other to enlarge the power plant, have been authorized and will be constructed during the coming year.

The number of cases treated in this hospital during the year shows an increase of 766 over the preceding year. There were 222 soldiers discharged for disability, 42 transferred to the Government Hospital

for the Insane, and 20 died from all causes. Of the total number of admissions only 484 were from the Philippine Islands, a decrease of 69 admissions compared with the number treated in this hospital from the same source last year. Of the 20 deaths among the soldiers 7 were due to tuberculosis. Most of the 56 deaths among civilians in this hospital resulted from the earthquake. The following is a numerical statement of the movement of sick during the calendar year 1906:

	From the Philippine Islands.	From the United States.	Total.
Remaining in hospital Dec. 31, 1905	108	195	303
Total admissions during 1906	484	2,066	2,550
For gunshot wounds	15	16	31
For diarrhea and dysentery	86	66	152
For malarial fevers	12	20	32
For typhoid fever	4	40	44
For rheumatic affections	15	47	62
For venereal diseases	25	158	183
For injuries	31	416	447
For insanity	35	36	71
For alcoholism	2	58	60
For all other causes	259	1,209	1,468
Total returned to duty	175	1,107	1,282
Total discharged for disability	123	99	222
Total discharged per expiration	26	26	52
Total deaths from all causes	10	66	76
Desertions	8	9	17
Transferred to Hot Springs, Ark	12	15	27
Transferred to Fort Bayard, N. Mex	57	9	66
Transferred to Government Hospital for the Insane	27	18	45
Otherwise disposed of	72	800	872
Remaining in hospital Dec. 31, 1906	82	112	194

NOTE.—Civilians are included in the statistical statement.

UNITED STATES ARMY GENERAL HOSPITAL, FORT BAYARD, N. MEX.

The only important addition to the hospital in 1906 was a building for the post exchange. Considerable progress was made in the construction of permanent macadamized roads within the post.

The number of cases under treatment December 31, 1905, was 346; on December 31, 1906, 295. The total number of cases treated during the year, exclusive of minor ailments, was 736. This number includes 3 cases under observation in which the presence of tuberculosis could not be demonstrated, 3 cases of tuberculosis of the bones, 1 case of tuberculosis of the kidney, 1 case of gland tuberculosis, and 6 cases of nontuberculous disease. The remaining 722 cases were cases of pulmonary tuberculosis. The following table shows the results obtained in the treatment of all cases of pulmonary tuberculosis in 1906. The classification is that of Turban, as modified by the National Association for the Study and Prevention of Tuberculosis.

Class.	Number of cases.	Apparently cured.		Arrested.		Improved.		Unimproved.		Died.	
		No.	*Per ct.*	*No.*	*Per ct.*	*No.*	*Per ct.*	*No.*	*Per ct.*	*No.*	*Per ct.*
Class No. 1	31	9	29.03	14	45.16	3	9.67	5	16.12	0	.....
Class No. 2	354	25	7.06	146	41.24	91	25.70	89	25.14	3	0.84
Class No. 3	334	0	.....	39	11.67	97	29.04	135	40.41	63	18.86
Class No. 4	3	0	.....	0	.....	0	.....	1	33.33	2	66.66
Total	722	34	4.70	199	27.56	191	26.45	230	31.86	68	9.41

The table includes 11 readmitted cases class No. 2 and 2 readmitted cases class No. 1 in which the disease was found to be arrested upon readmission. It also includes 5 cases which remained less than one month and 13 cases of class No. 2 and 17 cases of class No. 3 which were admitted in December, 1906, all of which are classified as unimproved.

In order to illustrate more clearly the advantages of sanatorium treatment, it is desired to exclude cases in which the duration of treatment is unduly brief and those which are practically moribund on admission. The subjoined table has been prepared to show results obtained in cases of pulmonary tuberculosis which have been under treatment for at least six months. It includes all such cases with the exception of 8 readmitted cases in which the disease was found to be arrested on readmission.

Class.	Number of cases.	Apparently cured.		Arrested.		Improved.		Unimproved.		Died.	
		No.	*Per ct.*	*No.*	*Per ct.*	*No.*	*Per ct.*	*No.*	*Per ct.*	*No.*	*Per ct.*
Class No. 1	22	8	36.36	9	40.90	2	9.09	3	13.63	0	.....
Class No. 2	256	26	10.16	120	46.87	43	16.79	65	25.39	2	0.78
Class No. 3	209	0	.....	35	16.74	64	30.62	86	41.14	24	11.48
Total	487	34	6.98	164	33.66	109	22.38	154	31.62	26	5.33

Seventy-four deaths occurred in 1906. Of these, 5 resulted from nontuberculous diseases, viz: One each from typhoid fever (imported case), appendicitis, aortic aneurism, disease of aortic valves, and liver abscess. One patient died of Potts' disease and tuberculosis of the spinal meninges. The remaining 68 deaths were due to pulmonary tuberculosis with or without tuberculosis of other organs. Of these, 49 deaths occurred within the first six months of treatment, as shown in the following table:

	Weeks—				Months—		Years—			Total.
	1.	2.	3.	4.	2 to 6.	7 to 12.	2.	3.	4.	
Time of death of 59 cases under continuous treatment	4	3	4	10	24	11	3	....	....	59
Time of death of 9 cases not under continuous treatment:										
(*a*) Reckoned from last admission	1	....	....	1	2	3	2	....	....	9
(*b*) Reckoned from original admission	....	....	....	....	....	....	4	2	3	(9)
Total	....	....	....	....	....	....	....	....	....	68

ARMY AND NAVY GENERAL HOSPITAL, HOT SPRINGS, ARK.

During the last calendar year 641 patients were treated in this hospital, of which 26 were officers of the army, 3 were officers of the navy, and 1 of the marine corps. The admissions were classified as follows:

Rheumatism:
- Chronic, articular 135
- Subacute, articular 29
- Acute, articular 17
- Chronic, muscular 80
- Subacute, muscular 8

Malarial fever, cachexia 10

Nephritis	20
Arthritis, rheumatic and gouty	14
Lumbago	5
Stomach trouble	25
Sciatica	17
Neuritis	11
Neurasthenia	5
Other diseases	265

Of the total number of patients treated, 419 were returned to duty or returned to their homes, 43 were discharged for disability, 6 died, 92 were otherwise disposed of, and 81 remained under treatment at the end of the year.

UNITED STATES ARMY GENERAL HOSPITAL, WASHINGTON BARRACKS, D. C.

All the buildings are in poor repair and inadequate in every respect for their purposes, constant repairs being necessary to heating and plumbing systems to keep the buildings habitable. It will be necessary to keep this hospital in fair repair and fit for occupancy until the new Walter Reed Army General Hospital, now under construction, is completed.

As heretofore this hospital has served as the post hospital for Washington Barracks. A larger number of officers were under observation and treatment in 1906 than during any previous year since the organization of the hospital. Fifty-eight officers were admitted for treatment during the year, of whom 15 were remaining at the end of the year. The close observation over prolonged periods, which is possible only at a general hospital of this character, is of the greatest advantage both to the individual and to the service at large. Many of these cases would formerly have been on extended sick leave or subjects for action by army retiring boards. The results of daily observ tion under hospital control make it possible to express an authoritative opinion concerning the disability for which the officer is under treatment when asked for by higher authority.

During the last year 395 cases were admitted to this hospital, divided as follows: Medical 222, surgical 148, venereal 25. These, with the 48 cases remaining on sick report at the beginning of the year, make a total of 443 cases of all classes treated. Nine deaths occurred during the year.

Sixty-one major and 43 minor operations constitute the surgical work performed during the year, 98 of which operations were reported as successful and 2 partially so.

PROVIDENCE HOSPITAL.

The act approved June 30, 1906, having appropriated $19,000 for the support and medical treatment of destitute patients in the city of Washington, D. C., under a contract to be made with Providence Hospital by the Surgeon-General of the Army, the relief afforded was as follows:

Patients in hospital July 1, 1906	96
Admitted during the year	1,007
Total	1,103
Average number admitted per month	92
Number remaining in hospital June 30, 1907	95
Total number of days' treatment afforded	34,767

Average number of days' treatment per patient	32
Average number of patients treated per day	95
Longest term of treatment (days)	365
Shortest term of treatment (days)	1
Number of patients in hospital during the whole year	5

HOSPITAL CONSTRUCTION AND REPAIR.

During the last fiscal year plans and specifications were prepared for new modern hospitals to be erected at Columbus Barracks, Ohio, Fort D. A. Russell, Wyo., and Jefferson Barracks, Mo., and for additions required for the hospitals at Fort Leavenworth, Kans., and Fort Sheridan, Ill. Plans and specifications were also prepared for improvements needed for the hospital at Fort Wingate, N. Mex., and a large number of sketch and other plans were prepared for use in connection with the Walter Reed United States Army General Hospital.

Contracts were entered into for the erection of the new hospitals at Columbus Barracks, Ohio, Fort D. A. Russell, Wyo., and Jefferson Barracks, Mo.; also for additions to the hospitals at Fort Sheridan, Ill., Fort William Henry Harrison, Mont., and Fort Wright, Wash.

New hospitals were completed at Fort Omaha, Nebr., Fort Sam Houston, Tex., Fort Totten, N. Y., Fort Warren, Mass., and Fort Wood, N. Y. The isolation hospital authorized for use in connection with the hospital at Fort Myer, Va., was also completed, likewise additions to the hospitals at Fort Ethan Allen, Vt., Plattsburg Barracks, N. Y., Fort Revere, Mass., Fort Rodman, Mass., Fort William Henry Harrison, Mont., and Fort Wright, Wash.

The hospital at the Presidio of Monterey, Cal., was badly damaged by fire, and funds were provided to rebuild it. The hospital at Fort Morgan, Ala., was almost destroyed by storm, and funds were supplied to repair the damage. A ward building at Fort Screven, Ga., was moved, repaired, and connected with the new hospital lately completed at that post, thus increasing the capacity of the hospital to 26 beds. The deadhouse used in connection with the hospital at this post was also moved, repaired, and placed in proper sanitary condition. The hospitals at Fort Monroe, Va., Fort Myer, Va., and Fort Riley, Kans., were improved, and all hospitals at military posts established and occupied have been kept in repair and modernized so far as funds would permit.

Plans and specifications for base and stationary hospitals were prepared for use in case of necessity, and were published in book form. This book contains 149 pages of printed matter, exclusive of the plates, and is so arranged that any single building or any number of buildings can be selected for construction and withdrawn from the publication without injury to the balance.

Funds were also provided to enlarge and improve the hospital accommodations in the Philippine Islands, to enlarge and improve the United States Army General Hospital at Fort Bayard, N. Mex., to repair and improve the general hospital at the Presidio, San Francisco, Cal., and for necessary repairs at the Army and Navy General Hospital, Hot Springs, Ark.; also for such repairs as were absolutely needed for the general hospital at Washington Barracks, D. C.

New quarters for hospital corps sergeants were authorized for Fort Egbert, Alaska, the Presidio of Monterey, Cal., and Vancouver Barracks, Wash. The quarters at Fort Egbert, Alaska, and Vancouver Barracks, Wash., have been completed, and the set at the Presidio of Monterey is under construction. The sergeants' quarters at Fort Screven, Ga., were moved to a convenient distance from the new hospital, repaired, improved, and placed in good condition. In addition to the above, the quarters at various posts have been repaired and improved so far as funds would permit. Owing to the increased cost of material and labor and the excessive cost of construction at various posts, it was not possible to meet all requirements from the limited amount appropriated for the purpose, and even with the increased appropriation for the coming fiscal year it will not be possible to meet the demands for new quarters at various posts where such buildings are absolutely necessary.

MEDICAL AND HOSPITAL SUPPLIES.

Since the year 1901 the demands on the medical and hospital appropriation for the Philippines have been small, owing to the large quantity of supplies sent to that division during the early days of occupation when the command there aggregated 70,000 men. This surplus has now been exhausted and during the past fiscal year supplies to the amount of $152,166.67 have been shipped to the supply depot, Manila.

Upon rumors of trouble in Cuba this office took immediate steps to furnish the necessary medical supplies for the army of occupation. Each regiment going to the island took its regimental field hospital, and two complete field hospitals and ambulance companies were organized to accompany the first brigade. In addition a 200-bed base hospital was assembled in the New York depot ready for immediate shipment provided a larger army was dispatched to the island. A supply depot was established in Havana and is still maintained there.

The wisdom of the policy of assembling field equipment for use in emergency, which was inaugurated by this department some years ago, was amply justified by this experience and enabled the medical department to furnish supplies for the force in Cuba without friction or interference with routine work.

The space assigned for a field medical supply depot at 1229 Twentieth street, this city, has proved inadequate. Proper representations on this subject were made to the War Department and has resulted in the lease of the Globe Building on Pennsylvania avenue for a field medical supply depot. This building will give ample space for the storage of any field supplies that may be assembled for some time to come. The building is now being repaired and strengthened and will be ready for occupancy in a few weeks.

On account of the great demands made upon the medical and hospital appropriation for the occupation of Cuba and for supplies for the Philippines, the appropriation for the fiscal year ending June 30, 1907, has proved entirely inadequate. The entire appropriation was consumed by April 1, and some expenditures had been made from the funds deposited to our credit for replacing military supplies. For this reason it was necessary to cancel the spring purchase and read-

vertise for supplies for which contracts were signed July 1. It was also necessary to limit all issues to military posts to supplies actually on hand in the medical supply depots. This lack of funds has seriously handicapped the department in its administration and has made it absolutely impossible to continue the assembling of field equipment. The medical department will begin the fiscal year 1908 with less field equipment than it had a year previous and with the regular stock in all supply depots in the United States at a lower figure than it has been for years. Estimates will be made for a larger appropriation for the fiscal year ending June 30, 1909, and the advisability of asking for a special appropriation from the coming Congress for field supplies will be brought to your attention. The collection of such field equipment as can not be readily purchased in the market is considered to be one of the most important duties of the medical department.

The stores of the medical department have continued, during the fiscal year just closed, to be drawn upon to a large extent for the equipment of the militia and the supply of other branches of the Government. The following tables exhibit approximately all of these transactions, as well as sales of serviceable stores authorized by law and regulations so far as reported up to June 30. The amounts indicated represent for the most part the first cost only of the stores mentioned. A number of the accounts had not yet been settled on June 30, and the figures here shown will be found therefore to exceed those set forth in the financial statement with which this report begins. In accordance with the law of June 12, 1906, these amounts accrue to a special fund, designated "Replacing medical supplies" on the books of the Treasury Department, and are available for purchases made during the fiscal years 1907 and 1908 to replace the supplies so disposed of.

A. Supplies issued to States and Territories for use of the organized militia, under section 1661, Revised Statutes, and appropriations supplementary thereto:

Arizona	$218.14
Arkansas	48.00
California	3,351.01
Connecticut	24.00
Florida	24.00
Georgia	3,701.60
Illinois	3,085.24
Indiana	600.00
Kentucky	336.00
Maryland	454.65
Massachusetts	439.98
Maine	268.22
Michigan	110.96
Montana	324.54
Nebraska	164.53
New Hampshire	97.28
New Jersey	652.07
New Mexico	12.00
New York	5,931.56
North Carolina	48.00
Ohio	1,544.48
Oklahoma	242.60
Rhode Island	300.00
South Carolina	3,218.82
South Dakota	193.44
Washington	24.00
	$25,415.12

B. Sales to States under section 17, act of Jan. 21, 1903 (32 Stats., 778):		
Missouri	$147.81	
Pennsylvania	167.12	
Rhode Island	42.45	
		$357.38
C. Supplies transferred to other Bureaus and Departments of the Government:		
Bureau of Immigration	$1,961.83	
Bureau of Forestry	85.00	
Bureau of Education	6.50	
Navy and Marine Corps	2,071.08	
Quartermaster's Department, U. S. Army	31.82	
Engineer Department, U. S. Army	49.92	
Isthmian Canal Commission	26,838.17	
Post exchanges	35.00	
		31,079.32
D. Supplies issued for relief of sufferers from earthquake and conflagration on the Pacific coast		200.10
E. Sales to the civil government of the Philippine Islands		176.83
F. Sales to civilian employees and civilians with the army		1,731.11
Total		58,959.86

ARMY MEDICAL MUSEUM.

The total number of specimens in the Army Medical Museum at the end of fiscal year June 30, 1907, was 34,209.

Among the pathological specimens contributed to the museum was a series of 30 by Maj. William H. Arthur, surgeon, U. S. Army, in charge of Barnes Hospital, District of Columbia; these were largely used in the pathological laboratory of the Army Medical School. From the United States Army General Hospital at Fort Bayard, N. Mex., were received 93 specimens, showing tuberculosis of different organs, sent by Dr. C. A. Treuholtz, contract surgeon, U. S. Army, and several also by First Lieut. R. H. Pierson, assistant surgeon, U. S. Army. Acknowledgment is also due to Dr. William G. McCallum, of Johns Hopkins Hospital, Baltimore, Md., and to Drs. L. W. Glazebrook and J. E. Mitchell, of Washington, D. C., for their interest in contributions of specimens.

LIBRARY OF THE SURGEON-GENERAL'S OFFICE.

The following table shows the additions made to the library during the fiscal year 1906–7:

Description.	On hand June 30, 1906.	Added during fiscal year.	Total June 30, 1906.
	Volumes.	*Volumes.*	*Volumes.*
Medical journals	48,630	1,388	50,018
Medical transactions	7,724	276	8,000
Bound theses	2,442	102	2,544
Bound pamphlets	2,875	1	2,876
Other medical books	97,120	1,737	98,857
Total	158,791	3,504	162,295
Medical theses	73,730	2,650	76,380
Medical pamphlets	205,968	3,585	209,553
Total	279,698	6,235	285,933

There were presented to the library during the year 521 books and 5,249 pamphlets and journals.

Volume XII, second series, of the Index Catalogue, includes the literature from the letter "O" to the end of "Periodicals," and forms a volume of 978 pages. It will be ready for distribution at the usual time. The manuscript for Volume XIII is in course of preparation.

ARTIFICIAL LIMBS AND APPARATUS.

Under the laws relating to artificial limbs, apparatus, or commutation therefor, orders on manufacturers were given during the fiscal year for 27 artificial legs, 2 arms, and 1 foot. Commutation certificates were issued for 170 cases of amputated leg, 125 amputated arm, 10 of amputated foot, and 2,339 cases of the loss of the use of a limb.

Under the act of June 17, 1870, and subsequent amendments thereto, 23,235 disabled soldiers and sailors have been furnished artificial limbs, or apparatus, or have received commutation in money, as follows: Total number benefited to June 30, 1907, 23,235; died, 10,864; dropped from rolls, 592; rejected after one or more payments, 559; remaining on rolls at the end of the fiscal year, 11,220.

Two-thirds of the periodical claims for the benefits under the artificial-limb laws for the three years ending June 30, 1911, become due in the fiscal year 1909. To meet these claims it is estimated that the sum of $410,000 will be required.

APPLIANCES AND TRUSSES.

One hundred and sixty-nine appliances were issued during the fiscal year and 642 trusses were furnished and fitted.

Very respectfully,

R. M. O'REILLY,
Surgeon-General, U. S. Army.

The SECRETARY OF WAR.

REPORT OF THE PAYMASTER-GENERAL.

REPORT OF THE PAYMASTER-GENERAL.

WAR DEPARTMENT,
OFFICE OF THE PAYMASTER-GENERAL,
Washington, August 1, 1907.

SIR: I have the honor to submit the following report for the fiscal year ended June 30, 1907:

On July 1, 1906, officers of the Pay Department were charged with public funds aggregating	$2,556,436.21
During the fiscal year these officers received:	
From the United States Treasury	32,675,182.80
From soldiers' deposits	1,572,204.04
From army paymasters' collections	907,051.07
Total balances and receipts	37,710,874.12
Accounted for as follows:	
Expended on account of pay of the Army	30,449,793.70
Expended on account of mileage to officers and contract surgeons	594,143.42
Expended on account of Army War College	15,061.88
Expended on account of pay of Military Academy	425,088.80
Expended on account of encampment and maneuvers, organized militia	152,307.27
Total expenditures	31,636,395.07
Surplus funds deposited to credit of U. S. Treasurer	647,467.82
Soldiers' deposits deposited to credit of U. S. Treasurer	1,566,539.04
Army paymasters' collections deposited to credit of U. S. Treasurer	907,051.07
Balance charged to officers June 30, 1907	2,953,421.12
Total accounted for	37,710,874.12

The appropriations for the pay of the Army and the Military Academy; for expenses of the Army War College, and allotment of funds for the payment of the Militia (under section 15 of the act of January 21, 1903), for the ended fiscal year amounted to $31,872,578.51; while the gross accountability involved in the transactions of the sixty-eight disbursing officers, including sixteen special disbursing agents, amounted to $63,321,344.08. Of the gross amount named, the sum of $2,556,436.21 was on hand June 30, 1906, and $2,953,421.12 remained on hand June 30, 1907.

The usual detailed statements of the disbursing officers' transactions and appropriation debits and credits are appended hereto.

ALLOTMENTS.

Under section 16 of the act of Congress of March 2, 1899, authorizing enlisted men to allot their pay "for the support of their families or relatives, for their own savings, or for other purposes," about 2,900

allotments are in force, upon which payments aggregating approximately $35,000 monthly or $420,000 annually, are made.

It is believed that the law should be amended to restrict allotments to the support of families or relatives, eliminating the privilege of allotting "for their own savings or for other purposes." In the Army deposit system a soldier has the very best means for saving his pay, the security being unquestioned and the interest, 4 per cent, reasonable. In a recent instance a company commander stated that men of his company who had made allotments payable to their credit in banks, immediately checked against the deposit, a practice which operates to make an extra pay day each month for the men concerned and not in the interest of discipline in the organization. For these reasons the officer, of his own initiative, desired the allotments discontinued, but the Paymaster-General could not accede to his request in view of the broad provisions of the law.

CLERKS, PAYMASTER-GENERAL'S OFFICE.

I must especially commend the clerks of this office for their untiring efforts and cheerful cooperation in my endeavors to prevent the work from falling into arrears. For some years the clerical force had been insufficient for the prompt accomplishment of the work and it has been extremely difficult to keep the business fully up to date. After the 1st of July, 1907, however, through the liberality of Congress, induced by a presentation of the undoubted necessity of a clerical increase, the office will be enabled to meet the demands of the work imposed upon it by law, regulations, and a scattered Army. A more prompt and exhaustive examination and analysis can be made of the expenditure of the thirty-odd millions of dollars annually appropriated, and paymasters' accounts can be in the hands of the accounting officers well within the sixty days' limit allowed by law, much to the relief of the Paymaster-General and to the examiners who have heretofore had to push their expert examinations too hurriedly for satisfactory thoroughness. Several very deserved and long-delayed promotions of clerks will be one of the incidental and gratifying results of this increase in the clerical force of the office, and I have no doubt will energize them afresh for the performance of the increasing duties of this most faithful class of public servants.

In this connection I desire to call particular attention to the fact that the pay of the four general classes of departmental clerks has remained unchanged since 1870, when the pay of clerks of class four was fixed at $1,800, class 3 at $1,600, class 2 at $1,400, and class 1 at $1,200, while it is conceded on all sides that the cost of living has nearly doubled during this period. The lowest salary in this office prior to the Spanish-American War was $1,200 per annum, but now clerks must enter at $900 per annum, a compensation so small that it is very difficult to secure proper material for the important work this office is called upon to perform. I therefore strongly recommend a reasonable increase of pay for all clerks, and especially urge upon the Secretary of War the justice of recommending to Congress that the salaries of all chief clerks of bureaus be increased to $2,250 per annum and of all chiefs of divisions to $2,000 per annum, as their compensation at the present time is certainly not commensurate with their responsibilities.

I would also renew the recommendations made by my predecessors in advocacy of retirement for government clerks with reasonable retired pay. Several bills on this subject were introduced in the Senate and House of Representatives at the last session of Congress, but were not acted upon. These bills do not contemplate that the retired pay shall be a charge against public funds, but that the payments are to be made from a fund created and set apart for the purpose in the Treasury by deductions from each clerk's monthly pay. It is to be hoped that Congress will give consideration to this matter at the next session. While there are no clerks in this office at the present time who are incapacitated for the performance of their full duties, it is probable that before many years shall have elapsed some of them, by reason of infirmities due to advanced age, may not be capable of fully meeting the demands of the positions they may then occupy. The question of how to dispose of these clerks under such circumstances presents quite a problem. To discharge them would not be a commendable proceeding; on the contrary, it would almost amount to cruelty, as few of such employees have any means of support outside of their salaries. There being no provision for their retirement with pay, the only thing left is to assign them to less exacting duties, with a corresponding reduction of salary; but this is only a makeshift, and the situation and conditions indicate the necessity for the legislation mentioned.

CUBAN PACIFICATION.

The extraordinary expenditures of the Pay Department chargeable to Cuban pacification have been, in gross for the seven months beginning with October and ending with February, 1907, $204,000.16, or an average monthly expenditure of about $30,000. The three largest items for the seven-months' period are: $40,128.44 for 10 per cent increase of pay to officers for foreign service, $112,302.08 for 20 per cent increase of pay for foreign service to enlisted men, and $32,584.23 for mileage to officers and contract surgeons. Calculating the yearly expenditures on the basis of the seven months' actual expenditure, we may conclude that $360,000 will be the Pay Department's share of the annual cost of maintenance of the army of pacification, provided that army shall be neither increased nor decreased.

The Bureau of Insular Affairs is being furnished by this office with the itemized statements covering monthly periods.

DEPOSITS.

The army deposit system encourages thrift among enlisted men, as it enables them to place their savings with the Government at a reasonable rate of interest. The subjoined table shows the deposits and repayments since the system was inaugurated and affords evidence that the men appreciate and take advantage of the opportunity to make deposits. The sums deposited annually equal approximately 12 per cent of the amount appropriated for pay of the enlisted force. Desertion forfeits deposits, but so small a fraction of depositors desert that it may be said that none do. As repayments can only be made on discharge, the system may be viewed as one very potent means of holding men in the service for an enlistment.

Number and amounts of deposits received from and repaid to soldiers on discharge from July 1, 1872, to June 30, 1907.

Fiscal year ending June 30—	Deposits received.		Deposits repaid.		
	Number.	Amount.	Number.	Principal.	Interest.
1873	.....	$209,850.38	.....	.....	.....
1874	.....	346,609.56	.....	.....	.....
1875	.....	325,255.80	.....	.....	.....
1876	.....	435,912.68	.....	.....	.....
1877	5,524	328,585.05	14,752	$1,041,001.57	$49,713.89
1878	5,524	346,243.94	3,182	145,667.91	88,420.24
1879	6,087	470,770.38	4,926	257,854.48	17,706.93
1880	8,635	477,174.44	8,084	392,568.93	30,680.97
1881	8,942	524,112.72	8,148	501,949.77	38,722.62
1882	6,890	448,561.83	7,570	428,482.44	31,658.73
1883	7,902	407,544.68	6,695	363,578.34	26,123.60
1884	7,114	389,267.55	8,184	404,291.57	31,124.93
1885	7,033	427,617.96	6,930	401,902.22	38,249.44
1886	7,261	469,031.55	7,835	490,506.79	46,583.23
1887	6,889	436,574.98	6,988	389,083.12	34,758.24
1888	7,409	386,944.10	6,346	323,952.97	29,327.01
1889	7,892	383,798.34	7,664	396,468.53	33,647.38
1890	7,634	395,128.82	7,206	411,039.74	41,596.60
1891	6,790	403,473.15	9,106	553,047.45	51,797.70
1892	5,570	334,464.70	8,019	410,873.15	38,894.26
1893	5,870	282,248.04	5,317	268,835.46	26,059.07
1894	5,914	361,830.76	5,786	290,088.98	27,014.32
1895	6,284	318,270.73	5,880	308,372.45	28,766.42
1896	8,778	420,338.87	6,486	359,200.43	38,614.66
1897	17,878	535,392.64	6,976	345,559.55	34,850.53
1898	21,856	613,513.51	17,377	561,518.64	45,815.61
1899	37,842	1,496,762.31	28,508	988,774.63	61,273.95
1900	91,461	3,215,544.66	27,571	1,028,146.34	43,234.89
1901	111,004	3,438,529.11	78,948	2,955,169.39	114,750.37
1902	80,833	2,660,250.66	129,271	3,708,820.19	190,957.77
1903	61,948	1,888,014.37	59,968	2,134,191.91	123,298.48
1904	59,970	1,585,687.60	62,198	1,838,105.64	107,032.95
1905	51,382	1,531,019.80	74,352	2,010,526.80	122,205.52
1906	54,266	1,495,228.04	35,899	1,168,236.62	70,112.93
1907	61,908	1,572,204.04	46,696	1,203,746.47	68,879.02
Total	.....	29,361,757.75	.....	26,081,562.48	1,651,872.26
Amount remaining to credit of depositors	.....	3,280,195.27	.....	.....	.....

NOTE.—Repayment of deposits to soldiers from July 1, 1872, to June 30, 1876, were not recorded by fiscal years. The repayments of 1877 include all deposits repaid prior thereto.

The above table gives a complete history of soldiers' deposits since the passage of the act authorizing them, May 15, 1872.

DETAIL SYSTEM.

Section 26 of the act of February 2, 1901, provides for four-year details of line officers of rank corresponding to that of vacancies to be filled in certain specified staff departments; and in course of time, unless this section of the law shall be changed or remedial legislation had, the extinction of staff officers holding permanent commissions will be the result.

I am convinced that such a result will not be for the best interests of the service so far as the Pay Department is concerned. Two paymasters-general have preceded me since the act was passed, and both of them, after mature consideration, have recommended that the application of the detail system should not extend beyond the lowest grade, which is that of captain; that the three field grades should be permanent; that vacancies occurring in the grade of major should be filled by the appointment of captains who have served or may be serving a detail and whose fitness for permanent commissions shall be established by the records they shall have made for efficiency in the disbursement and accountability of public funds; and that said permanent appointees should be eligible to promotion by seniority up to the grade of colonel.

In time of peace and while details have been confined to the lowest grade, the system has been as satisfactory as possible, but in time of hostilities the adequacy of the detailed system, when applied to the higher grades of major, lieutenant-colonel, and colonel, will meet the true test; and at such a time very few officers of the line of such grades will be found willing to relinquish chances for command, distinction, and advancement, and assume the pecuniary responsibilities and risks which attend the exigent disbursing duties of paymasters in the field. Independently of this view, and in advocacy of permanency in the field grades, it will not be denied that the officer who devotes his official life to special duties under a commission must become more expert, useful, and competent in the performance of them than officers intermittently serving for limited periods in one or the other, or all, of the seven departments or corps in the Army subject to detail.

Twice since the detail law was passed has one staff department been forced to ask Congress for relief from its limitations in order that its authorized personnel might be filled, and Congress afforded relief in the acts of March 2, 1903, and June 25, 1906; the former enlarging the circle of selection to include second lieutenants and the latter allowing selection to be made from any grade in which the vacancy may exist, "or from the grade below." As the necessity for changes to meet the requirements or interests of service presents itself to other staff departments or corps, further remedial legislation will doubtless be asked for, and finally a system of detail suited to all conditions of service and adjusted to the functions of each staff department will probably be evolved.

If the Secretary of War shall approve the conclusions of three paymasters-general, including myself, the coming session of Congress would seem to be an appropriate time to ask for such legislation as will insure the permanency of the field grades, in view of the fact that not later than January 1, 1908, a vacancy in the grade of major will occur which must, under existing conditions, be filled by the detail of a major from the line. I therefore submit for consideration the following provision, which if enacted into law will, in my opinion, be of unquestionable advantage to the Army, and especially in time of war:

Provided, That all vacancies hereafter occurring in the grade of major shall be filled by the permanent appointment of captains who have served or may be serving a detail in the Pay Department and whose fitness for appointment shall be established by their records for efficiency in the disbursement of and accountability for public funds, or from paymasters' clerks with not less than twenty years' service; that said permanent appointees shall be promoted to lieutenant-colonel and colonel according to seniority; and that section twenty-six of the act of February second, nineteen hundred and one (31 Stat. L., 755), is hereby amended accordingly.

INCREASED PAY FOR THE ARMY.

Near the close of the last session of Congress a concerted effort was made by the Secretary of War, the Chief of Staff, and accredited representatives of the Army, Navy, and Marine Corps for an increase of pay on the basis of the so-called Capron and Dick bills, which were identical in purpose. The House Committee on Military Affairs, before whom these several advocates of the measure appeared, showed evidence of a marked interest in the proposition. Figures were presented showing the cost for the three services of a flat 20 per cent increase and also for an increase of 10 per cent for general offi-

cers, 15 per cent for field officers, and 20 per cent for officers below that grade and for all enlisted men. Much information was elicited by the committee in respect of the necessities of an increase, based upon the evident increased cost of living as compared to such expenses some thirty-four years ago, when the last act establishing the rate of pay for the Army was passed. So much advancement was made in a thorough knowledge of the reasons for an increase that it is hoped the proposition will be again taken up at the coming session of Congress and prosecuted to a successful result.

Apart from the question of an increase in the pay of all enlisted men, in my opinion the present pay of noncommissioned officers of the line of the Army is entirely inadequate considering their responsibilities, and should be raised to an amount which will be in keeping with the importance of their positions. In the modern army, both in peace and war, the efficiency of a company depends to a much greater degree upon the noncommissioned officers than was formerly the case.

There is one noncommissioned officer in particular whose official relations to the men are more intimate than all others, and it may be said that upon him depends the whipping into shape of the men of the company, troop, or battery. I refer, of course, to the first sergeant, and I have yet to hear an officer who does not concede that he should have an exceptional increase of pay. Whether other enlisted men are given an increase of 20 per cent or not, I recommend that the base pay of a first sergeant be raised from $25 to $34 per month at least; and if the 20 per cent increase be given all enlisted men, that it be computed on the latter amount for a first sergeant if no other more remunerative provision for an increase shall be ultimately adopted.

MILEAGE.

The appropriation of $450,000 for mileage in the army appropriation act for the fiscal year 1907 was supplemented by a deficiency appropriation of $150,000. Had it not been, it would have been impossible to have met mileage expenses attendant upon the military movement to Cuba last fall or those made necessary to carry into effect the provisions of the act of January 25, 1907, reorganizing the artillery arm of the service and dividing permanently into independent branches the Coast and Field Artillery. Some 500 officers were affected by this law, and travel was necessary not only for the enlarged commissioned personnel authorized by the act, but for resulting examinations for promotions and assignment of officers to one branch or the other of the separated corps.

The following itemized statement shows the purpose for which travel has been made and the amount of mileage involved for such travel:

Mileage disbursements for the fiscal year ended June 30, 1907.

	Appropriations.		
	1905.	1906.	1907.
Inspection of the Army:			
By the generals commanding departments, accompanied by officers of their staffs, as provided by paragraph 191, Army Regulations		$218.54	$10,148.15
By officers of the Adjutant-General's Department			33.40
By officers of the Inspector-General's Department		944.96	14,621.95
By officers of the Quartermaster's Department		230.21	7,806.65
By officers of the Subsistence Department		51.52	5,501.70
By officers of the Medical Department		61.88	1,947.53
By officers of the Ordnance Department		389.26	10,184.59
By officers of the Corps of Engineers			838.09
By officers of the Signal Corps		169.36	2,930.99
Inspection of—			
Troops			105.12
Horses		487.11	4,544.64
Engineer and other property			104.78
Artillery districts		265.44	3,468.85
Submarine mines		281.27	1,953.70
Work on fortifications by engineer officers		141.55	3,340.23
Special inspections		27.54	681.91
Inspection of colleges			1,707.16
Inspection of militia	$164.99	234.19	9,577.29
Total for inspections	164.99	3,502.83	79,496.73
General recruiting duty		3,472.70	65,323.56
Joining for and returning from recruiting duty		111.44	5,239.71
Returning from conducting recruits		1,506.73	16,500.64
Total for recruiting		5,090.87	87,063.91
General Staff		346.40	2,576.97
Change of station	150.77	18,788.17	142,748.23
General Service and Staff College, Fort Leavenworth, Kans		166.62	4,479.09
Travel of general officers and their aids other than for inspection		217.88	3,006.77
Travel in Europe and other foreign countries		783.71	4,045.39
Courts-martial and courts of inquiry	96.82	1,235,68	18,031.30
Payment of troops	67.80	206.24	13,517.59
Officers of the line ordered to express offices to obtain money for payment of troops			231.11
Treasurer and professors Military Academy (Academy duty)		15.12	393.82
Instructions of Secretary of War (confidential duty)		2,970.46	7,895.86
Target practice, inspection target ranges and rifle teams		1,133.49	36,247.38
Conducting prisoners, sick and insane		253.45	4,851.67
Line officers on business for Quartermaster's and Subsistence departments		144.29	2,778.47
Retiring boards and officers retired and ordered home		1,123.91	8,537.36
Board of Ordnance and Fortification			1,493.43
Boards to examine officers for promotion		1,087.68	39,990.87
Boards for examination of gunners		610.78	1,110.05
Boards of Survey		5.04	38.78
Board on General Staff			1,281.96
Board to revise the report of the Endicott Board		206.32	266.59
Board on Church Claims, Philippine Islands			322.36
Board on Testing Revolvers			490.91
Board on selection of military sites			229.36
Board for considering questions pertaining to the protection of seacoast forts from attack by land			148.22
Witnessing method of preparing emergency ration		12.18	
Leases and other legal business		30.35	1,403.86
Topographical work		120.22	1,630.50
Military surveys			23.68
Consultation with division and department commanders		10.91	1,140.21
Special investigations		60.60	1,883.30
Fire control and installation			923.86
Pursuit of deserters and escaped prisoners			86.80
War College			1,190.94
Naval War College			135.46
Attending American Medical Association			101.44
Attending national association for study and prevention of tuberculosis			318.22
Attending Society American Bacteriologists			31.92
Attending special course, university, Liverpool, England			334.93
Attending National Guard Association			740.37
Attending dedication Carnegie Institute, Pittsburg, Pa			42.28
Attending National Rifle Association			31.92
Attending International Homeopathic Medical Congress			27.16
Attending Military Surgeons' Association			108.78
Attending American Veterinary Medical Association			216.58

Mileage disbursements for the fiscal year ended June 30, 1907—Continued.

	Appropriations.		
	1905.	1906.	1907.
Attending dedication ceremonies School of Applied Engineering, University of Pennsylvania			$19.18
Attending National Dental Association			39.48
Attending German army maneuvers			1,426.66
Attending British Medical Association			76.30
Attending funerals		$15.40	23.50
Army of Cuban pacification			39,747.88
Conference with Secretary of War			132.20
Accompanying Secretary of War on tour of inspection			1,268.48
Escort duty for Secretary of War			19.42
Witnessing balloon experiments			109.97
Militia officers attending garrison and service schools		6.48	928.92
Army maneuvers		505.61	24,797.48
Relief of sufferers from earthquake and conflagration on the Pacific coast		4,472.22	3,382.83
Pikes Peak Centennial Celebration			16.94
War Department exhibit at Cincinnati Fall Festival			38.71
Joint Army and Navy Board		32.14	48.79
Departments' field day			115.72
Joint Army and Militia Coast Defense Exercises			476.27
Duty at Jamestown Tercentennial Exposition			2,049.98
Accompanying representatives of foreign countries to the Jamestown Tercentennial Exposition			3,115.31
Artillery instruction at Indian Head and navy-yard gun factory			628.32
Field operations, Philippine Islands			100.69
Panama Canal			73.44
Orders fail to show specific duty enjoined			57.87
Amounts	$480.38	43,155.05	550,340.73
			43,155.05
			480.38
Total Pay Department disbursements during fiscal year 1907			593,976.16
Paid by Auditor for War Department, on Treasury settlements and chargeable to mileage appropriations	22.18	1,025.96	211.36
			1,025.96
			22.18
Aggregate, Pay Department and Auditor for War Department			595,235.66

Comparative statement of the principal items showing increase in milage for 1907 over that for 1906.

	1907.	1906.	Increase.
Actual expenses traveling with troops, act June 12, 1906	$22,004.38		$22,004.38
Army of Cuban pacification, October, 1906, to June, 1907	39,747.88		39,747.88
Change of station	142,748.23	$128,504.52	14,243.71
Boards to examine officers for promotion	39,990.87	11,216.72	28,774.15
Jamestown Tercentennial Exposition	5,165.29		5,165.29
Recruiting duty	87,063.91	80,808.34	6,255.57
Target practice, inspection target ranges, rifle teams	36,247.38	26,912.81	9,334.57
Total			125,525.55

MILITIA.

The militia organizations of the several States and Territories that participate with the Regular Army, under section 15 of the act of January 21, 1903, in operations at maneuver camps, or in joint exercises with the Coast Artillery, are paid by the Pay Department.

Between July 1 and September 30, 1906, maneuvers were conducted at seven different camps, viz: Mount Gretna, Pa.; Chickamauga, Ga.; Austin, Tex.; Fort Riley, Kans.; American Lake, Wash. (near Cheyenne, Wyo.), and Fort Benjamin Harrison, Ind.

A paymaster was present continuously at each of these camps and about $140,000 was disbursed as pay to the several organizations of State troops which participated. In June, 1907, thirty-one organizations of the National Guard of the State of New York took part with the Coast Artillery in the joint exercises during the month at the seacoast fortifications of Forts Schuyler, Totten, Wadsworth, and Hamilton, New York, and the pay of the organizations for such service amounted to $12,284.02.

All payments to militia cover the time from date of departure from home rendezvous to date of return thereto, and are made before the organizations begin the homeward journey. The Comptroller of the Treasury has decided that a member of the militia who is prevented by sickness, incurred in line of duty at the camps or exercises, from returning home with his command can not be paid beyond the date for which payment is made to the organization to which he belongs. Where this delay in returning home is protracted, the denial of pay will work a great hardship to the officers and men concerned, and it is believed legislation should be recommended which will remedy this inequitable condition.

PAYMASTERS' CLERKS.

The work of the Pay Department calls for clerks who are in sound physical condition, and whose mental qualifications are above the average for men in their station in life. Many of the clerks of to-day have seen years of hard frontier and foreign service. They have during that time shared in the handling of millions of dollars of public funds. They have always been faithful in the prompt discharge of their duties, loyal and alert in the protection of the public money, and zealous in acquiring a correct knowledge of all laws pertaining to disbursements. Most of them have not been able to acquire homes for their families, as they have seldom been stationed in one place more than three or four years. They have made the same long, hard trips monthly that the paymasters have made, and were subject to the same risks of attack on the public funds. Several attempts of this kind have been made, in one of which the clerk lost his life and in at least two instances the clerk was wounded. Yet there has been no provision made for the loss of health in tropical service, for their advancing years, or for their families in case they lose their lives in line of duty. This is neither right nor just to a peculiarly deserving class of men.

As a general proposition, all persons directly connected with the military establishment, as are paymasters' clerks, should have a military status and be subject to the rules and Articles of War. At present time paymasters' clerks can terminate their employment at their own convenience without regard to the necessities of the service, and since the Spanish-American war many clerks under orders for duty in our foreign possessions have resigned, causing embarrassment to the Department as well as to the paymasters with whom they were serving. Yet no one can blame them for protecting their lives and health under existing conditions.

The detail system is each day rendering it more necessary that paymasters' clerks shall be men having special aptitude and training for the work of the Pay Department. The detail of a paymaster

lasts four years, and in most instances it will take an officer from six to twelve months to familiarize himself thoroughly with the laws, regulations, and decisions governing disbursement of and accounting for public funds. During that time the only way he can avoid incorrect payments is by the advice and assistance of a competent clerk. It is therefore becoming more important each year that there should be an adequate force of competent, permanent clerks, and to this end I most earnestly recommend legislation that will make permanent the position of paymasters' clerk in the Army, so that at all times they shall be subject to the laws and regulations governing the Army, including the Articles of War, and that in future no person over 34 years of age shall be eligible for appointment, nor shall he be appointed until after he shall have passed such mental and physical examinations as may be prescribed by the Secretary of War.

PAYMENTS.

The Army in the United States, the Philippine Islands, Hawaii, Cuba, Porto Rico, and Alaska, is paid monthly and promptly. The officers of the Pay Department have been exceptionally zealous in the discharge of their important duties, and all public funds received by them have been duly accounted for.

PERSONNEL.

The following changes in Pay Department personnel occurred between July 1, 1906, and June 30, 1907:

APPOINTMENTS.

Col. Culver C. Sniffen, assistant paymaster-general, appointed brigadier-general and paymaster-general September 11, 1906.

PROMOTIONS.

Capt. Eugene Coffin, paymaster, promoted major and paymaster August 6, 1906.

Lieut. Col. William H. Comegys, deputy paymaster-general, promoted colonel and assistant paymaster-general September 13, 1906.

Maj. Elijah W. Halford, paymaster, promoted lieutenant-colonel and deputy paymaster-general September 13, 1906.

Capt. John R. Lynch, paymaster, promoted major and paymaster September 13, 1906.

Lieut. Col. William F. Tucker, deputy paymaster-general, promoted colonel and assistant paymaster-general April 15, 1907.

Maj. Harry L. Rogers, paymaster, promoted lieutenant-colonel and deputy paymaster-general April 15, 1907.

Capt. Charles E. Stanton, paymaster, promoted major and paymaster April 15, 1907.

RETIREMENTS.

Brig. Gen. Francis S. Dodge, paymaster-general, September 11, 1906, by operation of law.

Col. Albert S. Towar, assistant paymaster-general, April 15, 1907, upon his own application after more than thirty-two years' service.

DEATHS.

Maj. William B. Schofield, paymaster, August 6, 1906.

DETAILS FROM THE LINE.

Capt. Edward P. Orton, cavalry, July 25, 1906.
Capt. Frank D. Ely, infantry, August 15, 1906.
Capt. Samuel F. Dallam, cavalry, October 22, 1906.
Capt. Henry G. Lyon, infantry, November 2, 1906.
Capt. Edward C. Carey, infantry, April 16, 1907.

DETAILED PAYMASTERS RELIEVED.

Capt. Francis G. Irwin, cavalry, July 25, 1906, on completion of four years' detail.

Capt. Benjamin M. Purssell, infantry, October 31, 1906, on promotion to majority.

Respectfully submitted.

C. C. SNIFFEN,
Paymaster-General, U. S. Army.

The SECRETARY OF WAR.

Statement of the account of the Pay Department, U. S. Army, with the appropriations subject to its control during the fiscal year ending June 30, 1907.

Appropriations.	In account with the Treasury.						
	Balance in the Treasury July 1, 1906.	Amount of appropriations and transfer warrants.	Unexpended balances deposited.	Paymasters' collections deposited.	Soldiers' deposits deposited.	Repayments in settlement of accounts.	Total.
Pay, etc., of the Army, 1907		$31,156,526.96	$7,154.54	$501,400.77		$339.56	$31,665,421.83
Pay of Military Academy, 1907		460,274.25					460,274.25
Mileage to officers and contract surgeons, 1907		603,077.51		1,730.78			604,808.29
Army War College, 1907		15,000.00					15,000.00
Encampment and maneuvers, organized militia, 1907		172,196.00	29,689.52	3.50		13.89	201,902.91
Pay, etc., of the Army, 1906	$1,908,797.94	6,850.58	517,691.48	137,700.58		83.21	2,571,123.79
Pay of Military Academy, 1906	22,371.52	200.00	10,800.70				33,372.22
Mileage to officers and contract surgeons, 1906	481.78	65,944.02	18,904.80	1,802.02			87,132.62
Army War College, 1906	4,643.45						4,643.45
Pay, etc., of the Army, 1905	966,663.73	41,817.41	68,305.61	1,464.23		121.34	1,078,372.32
Pay of Military Academy, 1905	41,596.77						41,596.77
Mileage to officers and contract surgeons, 1905	34,973.31	5.38	5,932.17	9.58			40,920.44
Army War College, 1905	109.40						109.40
Encampment and maneuvers, organized militia, 1905	123.16						123.16
Pay, etc., of the Army, 1904 and prior years			13,424.19	1,004.08		188.14	14,616.41
Extra pay to volunteers, war with Spain	30.80	73,467.74		8.00		213.04	73,719.58
Extra pay to Regular Army, war with Spain	10,344.30					17.60	10,361.90
Reimbursement to contract surgeons	943.55						943.55
Extra pay to officers and men who served in the Mexican war		21.00					21.00
Relief to sufferers by earthquake and conflagration on Pacific coast	25,000.00						25,000.00
Pay of two and three year volunteers, 1871 and prior years						677.95	677.95
Pay of the army deposit fund		4,417,165.27			$1,223,459.17	180.00	5,640,804.44
CERTIFIED CLAIMS.							
Pay, etc., of the Army	3,313.75	9,166.58				7.60	12,487.93
Pay, etc., of the Army, war with Spain, 1907		250,055.09				389.73	250,444.82
Pay, etc., of the Army, war with Spain, 1906	33,284.52			6.16		34.51	33,325.19
Pay, etc., of the Army, war with Spain, 1905						13.59	13.59
Arrears of pay, bounty, etc., 1907		200,000.00				69.59	200,069.59
Arrears of pay, bounty, etc., 1906	39,719.72					98.82	39,818.54
Arrears of pay, bounty, etc., 1905	68,363.98					32.45	68,396.43
Judgments, Court of Claims (war)	3,606.17	202,890.27					206,496.44
Traveling expenses of California and Nevada volunteers	256.51						256.51
Pay, transportation services, and supplies, Oregon and Washington volunteers		264.79					264.79
Pay of volunteers, Mexican war		12.13					12.13
Relief of Maj. Seymour Howell, paymaster, U. S. Army		2,000.00					2,000.00
Total	3,164,624.36	37,676,934.98	671,903.01	645,129.70	1,223,459.17	2,481.02	43,384,532.24

Appropriations.	In account with the Treasury—Continued.						
	Amount drawn by requisition and warrant.		Amount covered into surplus fund.	Total.	Balance in the Treasury June 30, 1907.	Balance in the hands of paymasters, June 30, 1907.	Total balances June 30 1907.
	On Pay Department request.	On Treasury settlements.					
Pay, etc., of the Army, 1907	$31,371,000.00	$267,737.03		$31,638,737.03	$26,684.80	$2,721,506.45	$2,748,191.25
Pay of Military Academy, 1907	429,500.00	45.00		429,545.00	30,729.25	30,121.59	60,850.84
Mileage to officers and contract surgeons, 1907	593,500.00	211.36		593,711.36	11,096.93	42,424.08	53,521.01
Army War College, 1907	10,000.00	401.74		10,401.74	4,598.26	1,881.36	6,479.62
Encampment and maneuvers, organized militia, 1907	194,196.00	1,272.51		195,468.51	6,434.40	1,454.44	7,888.84
Pay, etc., of the Army, 1906		2,296,207.47		2,296,207.47	274,916.32	83,072.51	357,988.83
Pay of Military Academy, 1906		30.56		30.56	33,341.66	312.39	33,654.05
Mileage to officers and contract surgeons, 1906	50,000.00	1,235.72		51,235.72	35,896.90	3,309.58	39,206.48
Army War College, 1906	4,486.80	52.00		4,538.80	104.65	2,338.72	2,443.37
Pay, etc., of the Army, 1905	22,000.00	1,048,360.97	$8,011.35	1,078,372.32			
Pay of Military Academy, 1905			41,596.77	41,596.77			
Mileage to officers and contract surgeons, 1905	500.00	251.66	40,168.78	40,920.44			
Army War College, 1905			109.40	109.40			
Encampment and maneuvers, organized militia, 1905		123.16		123.16			
Pay, etc., of the Army, 1904 and prior years		30.09	14,586.32	14,616.41			
Extra pay to volunteers, war with Spain		73,719.58		73,719.58			
Extra pay to Regular Army, war with Spain		3,941.04		3,941.04	6,420.86		6,420.86
Reimbursement to contract surgeons					943.55		943.55
Extra pay to officers and men who served in the Mexican war		21.00		21.00			
Relief to sufferers by earthquake and conflagration on Pacific coast		25,000.00		25,000.00			
Pay of two and three year volunteers, 1871 and prior years			677.95	677.95			
Pay of the army deposit fund		1,595,613.11		1,595,613.11	4,045,191.33		4,045,191.33
CERTIFIED CLAIMS.							
Pay, etc., of the Army		9,166.58		9,166.58	3,321.35		3,321.35
Pay, etc., of the Army, war with Spain, 1907		249,685.67		249,685.67	759.15		759.15
Pay, etc., of the Army, war with Spain, 1906		24,022.63		24,022.63	9,302.56		9,302.56
Pay, etc., of the Army, war with Spain, 1905			13.59	13.59			
Arrears of pay, bounty, etc., 1907		199,969.75		199,969.75	99.84		99.84
Arrears of pay, bounty, etc., 1906		8,268.82		8,268.82	31,549.72		31,549.72
Arrears of pay, bounty, etc., 1905			68,396.43	68,396.43			
Judgments, Court of Claims (war)		177,164.33	307.75	177,472.08	29,024.36		29,024.36
Traveling expenses of California and Nevada volunteers					256.51		256.51
Pay, transportation services, and supplies, Oregon and Washington volunteers		264.79		264.79			
Pay of volunteers, Mexican war		12.13		12.13			
Relief of Maj. Seymour Howell, paymaster, U. S. Army		2,000.00		2,000.00			
Total	32,675,182.80	5,984,808.70	173,868.34	38,833,859.84	4,550,672.40	2,886,421.12	7,437,093.25

Statement showing the balance in the hands of each disbursing officer of the Pay Department, States Treasury, or turned over by other agents during the fiscal year ending June 30, 1907; replacement in the Treasury, and the balance remaining in the hands of paymasters to be

Rank and name.	Balance in hands of each paymaster on June 30, 1906.	Remitted from the Treasury in the year ending June 30, 1907.	Received from other paymasters.	Received from paymaster's collections.	Received from soldiers' deposits.	Total received and to be accounted for.
Colonels and assistant paymasters-general.						
Towar, A. S	$20,851.00	$812,600.00	$207,143.60	$3,075.12	$8,786.65	$1,052,456.37
Sniffen, C. C	111,468.64	1,147,000.00	52,573.29	376.23	362.45	1,311,780.61
Whipple, C. H	188,264.84	3,254,653.46	709,148.54	4,290.10	6,275.68	4,162,632.62
Comegys, W. H	114,006.56	4,544,000.00	274,173.56	1,836.65	4,417.50	4,938,434.27
Tucker, W. F	257,386.63	3,725,000.00	340,662.77	607.24	140.00	4,323,796.64
Lieutenant-colonels and deputy paymasters-general.						
Muhlenberg, J. C	50,594.89	3,463,666.68	393,694.12	5,476.05	1,711.25	3,915,142.99
Smith, G. R	53,140.46	802,700.00	254,449.93	27,819.48	38,765.09	1,176,874.96
Halford, E. W	100,705.56	2,292,000.00	434,428.32	5,237.34	3,682.67	2,836,053.89
Rogers, H. L			50,000.00			50,000.00
Majors and paymasters.						
Vinson, W	52,364.75	887,000.00	261,058.48	15,453.21	18,813.37	1,234,689.81
Wallace, H. S		800,500.00	99,848.70	19,250.88	38,462.43	958,062.01
Payson, F. L	69,480.55		909,891.94	9,469.92	50,683.08	1,039,525.49
Downey, G. F		272,000.00	532,686.81	22,762.10	63,071.03	890,519.94
Goodman, T. C	44,187.03	862,000.00	180,954.88	25,210.81	40,315.94	1,152,668.66
Houston, J. B		269,000.00	114,006.23	14,408.92	15,577.69	412,992.84
Ray, B. B	34,454.90	310,000.00	429,368.30	15,835.99	9,345.23	799,004.42
Lord, H. M			80,000.00	4.65		80,004.65
Rochester, W. B	40,279.86	1,300,000.00	1,220,213.50	3,067.66	8,059.00	2,571,620.02
Smith, R. S	13,334.88	488,000.00	287,235.68	24,960.72	26,498.30	840,029.58
Holloway, G. T	16,000.84	1,217,000.00	185,265.39	14,000.89	14,500.03	1,446,767.15
Gambrill, W. G	76,344.68	982,000.00	896,434.02	25,024.52	31,372.29	2,011,175.51
Keleher, T. D	56,767.80	60,746.00	543,055.10	22,906.10	29,979.68	713,454.68
Pickett, G. E	63,360.49	568,666.66	949,797.82	32,282.17	33,401.43	1,647,508.57
Curry, M. B	76,129.48		456,203.25	10,110.72	30,796.22	573,239.67
Dawes, J. W	19,834.05	650,000.00	385,508.40	25,821.59	38,340.55	1,119,504.59
Canby, Jas	67,073.35		1,071,429.82	16,128.73	97,312.32	1,251,944.22
Coffin, Eugene	38,918.68	200,000.00	936,804.84	13,049.04	36,278.83	1,225,051.39
Lynch, J. R	20,599.03		733,225.30	10,208.25	18,089.30	782,121.88
Stanton, C. E	58,023.81	129,100.00	584,046.36	20,413.78	14,368.75	805,952.70
Stevens, P. C	80,426.51	314,850.00	264,569.18	23,128.87	18,618.48	701,593.04
Captains and paymasters.						
Slaughter, B. D	4,321.19	230,500.00	338,912.13	15,981.93	17,726.73	607,441.98
Day, F. R	37,527.21		645,169.02	16,874.93	26,966.31	726,537.47
Bullington, A. P	21,035.87		758,755.79	23,153.68	35,252.93	838,198.27
Dwyer, C. G	19,307.46		785,475.32	27,494.52	32,598.37	864,875.67
Carnahan, E. C	34,365.92		380,031.05	10,478.73	25,976.58	450,852.28
Moody, T. M			477,500.00	13,232.17	52,155.49	542,887.66
Sigworth, J. M	65,191.25	1,085,000.00	55,007.56	65,361.27	45,100.46	1,315,660.54
Fenton, C. W	74,522.52		868,044.25	26,646.35	15,337.60	984,550.72
Carey, E. C		82,000.00	95,453.45	1,262.77	2,862.00	181,578.22
Lyon, H. G		115,000.00	74,606.30	3,877.65	2,429.77	195,913.72
Ely, F. D		188,000.00	319,897.04	15,857.53	18,024.85	541,779.42
Sweezey, C. B	43,328.61	125,000.00	543,038.24	30,143.06	21,215.48	762,725.39
Creary, W. F	41,929.92		495,000.00	14,172.82	47,346.04	598,448.78
Johnston, F. E			498,098.19	8,580.03	30,247.52	536,925.74
McIntyre, T. H. R	80,846.89	45,000.00	816,327.83	33,265.32	33,290.42	1,008,730.46
Spinks, M. G		30,000.00	562,705.12	25,702.12	80,739.95	699,147.19
Purssell, B. M	86,274.08	150,000.00	179,696.16	12,216.79	12,099.07	440,286.10
Dixon, H. B	19,233.22		662,985.62	18,648.27	85,394.42	786,261.53
Moses, G. W	92,990.00		677,075.00	16,992.59	81,481.27	868,538.86
Brown, Preston		414,700.00	393,593.05	29,150.51	41,110.63	878,554.19
Dallam, S. F			415,000.00	14,117.93	21,078.91	450,196.84
Orton, E. P		326,000.00	454,556.36	20,139.04	27,666.87	828,362.27
Valentine, W. S	44,802.63		400,000.00	13,798.45	48,832.28	507,433.36
Holden, G. J	55,277.39	172,500.00	256,699.21	8,888.63	10,315.04	503,680.27
Arrowsmith, G. D	33,688.10	354,000.00	230,320.21	23,910.75	21,153.43	663,072.49

United States Army, on the 1st of July, 1906; the amount remitted to each from the United the amounts accounted for by accounts and vouchers of expenditures, or by transfer or accounted for in the next fiscal year.

Surplus funds deposited in the Treasury.	Paymaster's collections deposited in the Treasury.	Soldiers' deposits deposited.	Expenditures.	Transferred to other paymasters.	Balance in hands of each paymaster on June 30, 1907.	Total accounted for.
.....	$3,075.12	$8,786.65	$335,329.25	$705,265.35	.....	$1,052,456.37
.....	376.23	362.45	349,002.05	962,039.88	.....	1,311,780.61
$10,630.36	4,290.10	6,275.68	1,339,649.79	2,531,665.34	$270,121.35	4,162,632.62
46,491.99	1,836.65	4,417.50	1,673,953.10	3,033,851.39	177,883.64	4,938,434.27
175,100.60	607.24	140.00	129,685.18	3,929,042.90	89,221.32	4,323,796.64
19,683.36	5,476.05	1,711.25	1,368,107.62	2,520,164.71	.....	3,915,142.99
.....	27,819.48	38,765.09	877,596.40	232,693.99	.....	1,176,874.96
55,167.52	5,237.34	3,682.67	839,979.78	1,931,986.58	.....	2,836,053.89
.....	.....	.....	.....	50,000.00	.....	50,000.00
99.83	15,453.21	18,813.37	582,269.50	523,232.58	94,821.32	1,234,689.81
26,291.94	19,250.88	38,462.43	699,601.17	174,455.59	.....	958,062.01
.....	9,469.92	50,683.08	378,244.03	356,018.15	245,110.31	1,039,525.49
77.90	22,762.10	63,071.03	504,735.99	221,491.75	78,381.17	890,519.94
623.36	25,210.81	40,315.94	864,792.65	149,885.94	71,839.96	1,152,668.66
2,371.25	14,408.92	15,577.69	329,820.09	26,945.49	23,869.40	412,992.84
18,288.45	15,835.99	9,345.23	432,372.40	323,162.35	.....	799,004.42
.....	4.65	.....	12,995.40	.....	67,004.60	80,004.65
15,781.76	3,067.66	8,059.00	722,086.53	1,822,625.07	.....	2,571,620.02
11,311.40	24,960.72	26,498.30	475,212.43	302,046.73	.....	840,029.58
5,544.89	14,000.89	14,500.03	670,184.20	624,747.08	117,790.06	1,446,767.15
44,810.92	25,024.52	31,372.29	962,709.80	886,462.57	60,795.41	2,011,175.51
16,338.39	22,906.10	29,979.68	591,550.53	52,054.49	625.49	713,454.68
17.00	32,282.17	33,401.43	864,540.44	633,359.85	83,907.68	1,647,508.57
.....	10,110.72	30,796.22	334,108.49	134,955.19	63,269.05	573,239.67
19,743.37	25,821.59	38,340.55	715,548.32	244,391.44	75,659.32	1,119,504.59
.....	16,128.73	97,312.32	674,568.20	379,719.86	84,215.11	1,251,944.22
.....	13,049.04	36,278.83	441,430.05	664,968.33	69,325.14	1,225,051.39
.....	10,208.25	18,089.30	385,262.94	284,350.18	84,211.21	782,121.88
.....	20,413.78	14,368.75	535,387.62	159,074.69	76,707.86	805,952.70
.....	23,128.87	18,618.48	434,636.25	206,454.37	18,755.07	701,593.04
7,087.57	15,981.93	17,726.73	489,525.88	77,119.87	.....	607,441.98
.....	16,874.93	26,966.31	471,347.33	211,348.90	.....	726,537.47
.....	23,153.68	35,252.93	626,866.76	1,000.00	151,924.90	838,198.27
.....	27,494.52	32,598.37	646,994.86	115,770.91	42,017.01	864,875.67
.....	10,478.73	25,976.58	352,166.24	15,188.78	47,041.95	450,852.28
.....	13,232.17	52,155.49	430,193.68	1,069.38	46,236.94	542,887.66
.....	65,361.27	45,100.46	1,090,321.59	59,953.25	54,923.97	1,315,660.54
.....	26,646.35	15,337.60	839,463.69	41,005.87	62,097.21	984,550.72
.....	1,262.77	2,862.00	69,136.79	.....	108,316.66	181,578.22
.....	3,877.65	2,429.77	138,944.25	.....	50,662.05	195,913.72
.....	15,857.53	18,024.85	319,479.39	134,639.70	53,777.95	541,779.42
157.66	30,143.06	21,215.48	635,176.06	62,919.85	13,113.28	762,725.39
.....	14,172.82	47,346.04	505,293.52	31,636.40	.....	598,448.78
.....	8,580.03	30,247.52	303,662.19	115,605.73	78,830.27	536,925.74
2,535.63	33,265.32	33,290.42	893,282.12	21,846.13	24,510.84	1,008,730.46
.....	25,702.12	80,739.95	533,028.29	38,724.92	20,951.91	699,147.19
40,323.28	12,216.79	12,099.07	335,266.61	40,380.35	.....	440,286.10
.....	18,648.27	85,394.42	596,111.43	4,100.00	82,007.41	786,261.53
.....	16,992.59	81,481.27	717,397.64	48,667.36	4,000.00	868,538.86
3,507.40	29,150.51	41,110.63	640,908.78	155,995.96	7,880.91	878,554.19
.....	14,117.93	21,078.91	354,235.08	.....	60,764.92	450,196.84
41,623.90	20,139.04	27,666.87	558,702.03	105,367.53	74,862.90	828,362.27
.....	13,798.45	48,832.28	426,745.60	6,596.76	11,460.27	507,433.36
18,000.00	8,888.63	10,315.04	330,022.21	110,835.18	25,619.21	503,680.27
.....	23,910.75	21,153.43	596,481.59	21,526.72	.....	663,072.49

Statement showing the balance in the hands of each disbursing officer of the Pay

Rank and name.	Balance in hands of each paymaster on June 30, 1906.	Remitted from the Treasury in the year ending June 30, 1907.	Received from other paymasters.	Received from paymaster's collections.	Received from soldiers' deposits.	Total received and to be accounted for.
Special disbursing agents, Pay Department, United States Army.						
Wisser, J. P.			$5,393.15			$5,393.15
Irons, J. A.			1,316.00			1,316.00
Edwards, F. A.	$1,191.26		5,000.00			6,191.26
Kennon, L. W. V.	11.89		4,426.00			4,437.89
Gibson, W. W.	179.91		5,000.00			5,179.91
Baylies, Jas.			49,159.05	$788.17	$3,806.00	53,753.22
Stokes, M. B.			77,072.68	541.93	10,020.00	87,634.61
Nichols, Maury	28,466.23		1,308.33	84.13	1,446.90	31,305.59
Giddings, Paul	10,895.80		209.08			11,104.88
Reeves, J. H.			600.00			600.00
Guinard, W. S.	1,177.75		5,000.00			6,177.75
Clifton, A. T.			36,625.57	1,494.76	7,495.39	45,615.72
Breckenridge, E. L. D.			16,260.92			16,260.92
Beacom, J. H.			5,000.00	3.76		5,003.76
Biddle, W. S.			8,100.00			8,100.00
Pershing, J. J.	1,370.78		3,000.00			4,370.78
Young, Chas.			3,512.04			3,512.04
Parker, Frank			3,000.00			3,000.00
McClintock, John	5,000.00		3,000.00			8,000.00
Cordier, Constant			562.13			562.13
Plummer, E. H.	24,964.96		18,280.94	80.66	2,868.00	46,194.56
Stamper, W. Y.	4,536.10		818.74	.10	1,375.10	6,730.04
Hemphil, J. E.		$5,000.00	800.00			5,800.00
Young, Jas. S.			19,952.73	58.22	229.00	20,239.95
Humber, R. C.			3,517.56			3,517.56
Bolton, E. B.			58,660.96	741.23	6,436.99	65,839.18
Moon, H. B.			53,069.05	1,092.54	4,099.00	58,260.59
Total	2,556,436.21	32,675,182.80	25,610,469.96	907,051.07	1,572,204.04	63,321,344.08

Department, United States Army, on the 1st of July, 1906, etc.—Continued.

Surplus funds deposited in the Treasury.	Paymaster's collections deposited in the Treasury.	Soldiers' deposits deposited.	Expenditures.	Transferred to other paymasters.	Balance in hands of each paymaster on June 30, 1907.	Total accounted for.
.....	.....	.....	$3,977.97	$1,408.14	$7.04	$5,393.15
$38.42	.....	.....	1,277.58	.....	.....	1,316.00
487.00	.....	.....	5,670.33	.....	33.93	6,191.26
.....	.....	.....	2,950.66	.....	1,487.23	4,437.89
179.91	.....	.....	4,473.59	.....	526.41	5,179.91
10,289.75	$788.17	$3,806.00	23,478.38	.....	15,390.92	53,753.22
21,537.05	541.93	10,020.00	30,543.41	.....	24,992.22	87,634.61
.....	84.13	.....	7,532.66	23,688.80	.....	31,305.59
.....	.....	.....	.....	11,104.88	.....	11,104.88
.....	.....	.....	250.03	.....	349.97	600.00
1,177.75	.....	.....	3,136.51	.....	1,863.49	6,177.75
.....	1,494.76	7,495.39	33,842.04	.....	2,783.53	45,615.72
.....	.....	.....	384.08	.....	15,876.84	16,260.92
2,786.98	3.76	.....	2,213.02	.....	.....	5,003.76
1,300.00	.....	.....	1,906.85	4,893.15	.....	8,100.00
1,370.78	.....	.....	1,745.46	1,254.54	.....	4,370.78
.....	.....	.....	2,926.70	585.34	.....	3,512.04
.....	.....	.....	505.34	2,494.66	.....	3,000.00
5,000.00	.....	.....	.....	3,000.00	.....	8,000.00
7.80	.....	.....	554.33	.....	.....	562.13
18,146.90	80.66	25.00	5,730.45	22,211.55	.....	46,194.56
.....	.10	.....	843.64	5,886.30	.....	6,730.04
.....	.....	.....	.....	5,800.00	.....	5,800.00
.....	58.22	229.00	4,358.22	.....	15,594.51	20,239.95
.....	.....	.....	.....	3,517.56	.....	3,517.56
2,736.35	741.23	6,436.99	35,971.88	19,952.73	.....	65,839.18
800.00	1,092.54	4,099.00	36,008.13	16,260.92	.....	58,260.59
647,467.82	907,051.07	1,566,539.04	31,636,395.07	25,610,469.96	2,953,421.12	63,321,344.08

REPORT OF CHIEF OF ENGINEERS, MILITARY AFFAIRS.

To avoid duplication this report is printed in Report of the Chief of Engineers, Volume V.

REPORT OF THE CHIEF OF ORDNANCE.

To avoid duplication this report is printed in Report of the Chief of Ordnance, Volume VI.

REPORT OF THE CHIEF SIGNAL OFFICER.

REPORT OF THE CHIEF SIGNAL OFFICER.

War Department,
Office of the Chief Signal Officer,
Washington, August 1, 1907.

Sir: I have the honor to submit my annual report of the Signal Corps of the Army for the fiscal year ending June 30, 1907.

SCOPE AND CONDITIONS.

The duties prescribed by law have been successfully carried out. Military cable and telegraph lines and wireless stations have been maintained in Alaska, the Philippine Islands, Cuba, and the United States. Portable wireless sets for the mobile army have been satisfactorily used. Progress has been made in the aeronautical equipment for the Army. The equipment for fire control and direction (both for the Coast and Field Artillery) and for keeping up military lines of information and control with all arms of the service in campaign has reached a high state of development. At the three signal corps posts at which are located schools of instruction for the enlisted men and general supply depots, conditions have been favorably commented upon by officers of the Inspector-General's Department. Marked advance has been made in the development of a system of tactical lines of information for the mobile army, the realization of which must await the action of Congress in providing the necessary personnel.

ALASKAN TELEGRAPH SYSTEM.

The Washington-Alaska Military Cable and Telegraph System consists of 2,524 miles of submarine cable, 1,403 miles of land lines, and 107 miles of wireless. The cable system extends from Seattle to Sitka, Sitka to Valdez, Valdez to Seward, with branch lines from Sitka to Juneau and from Valdez to Liscum, Juneau to Haines Mission, Haines Mission to Skagway, Cape Fanshaw to Wrangel, Wrangel to Hadley, and Hadley to Ketchikan. The land lines connect with the cable system at Valdez and extend from that point to St. Michael and Eagle City. From St. Michael to Safety Harbor, across Norton Sound, there is a wireless system and a land line from Safety to Nome.

The system has worked efficiently for the transaction of the official business of the United States during the year, and, so far as known, is satisfactory to the people of Alaska, as approximately 260,000 commercial messages were handled.

ADMINISTRATION.

The Alaskan Cable and Telegraph System has been under the direction of the chief signal officer, Department of the Columbia, at Seattle, Wash.

For convenience of administration and supply this system is divided into four sections, with three officers of the Signal Corps conducting these administrative functions.

The first and second sections include the lines between Valdez, Boundary, and to near the Goodpaster River.

The third section embraces the extensive and difficult country along the Tanana and down the Yukon to Kaltag.

The fourth section is west of Kaltag.

STATIONS AND DISTANCES.

The system comprises elements not elsewhere combined, submarine, land, and wireless sections are worked as a component and harmonious whole. It consists of 1,403 miles of land line, 107 miles of wireless, and 2,524 miles of submarine cable. The inclosed map makes clear situations that can not be easily described.

	Intermediate.	Total.
NOME-VALDEZ SECTION.		
Land lines.	*Miles.*	*Miles.*
Nome	0	0
Fort Davis	4	4
Safety	20	24
St. Michael (wireless)	107	131
Golsova	35	166
Unalakleet	30	196
Old Woman	50	246
Kaltag	45	291
Nulato	40	331
Koyukuk	30	361
Grimkop	20	381
Louden	30	411
Melozi	35	446
Kokrines	38	484
Birches	40	524
Fort Gibbon	55	579
Rapids	24	603
Rampart	23	626
Glen	35	661
Hot Springs	21	682
Tolovana	37	719
Minto	39	758
Nenana	35	783
Chena	29	822
Fairbanks	10	832
Salcha	37	869
Delta	29	898
Richardson	2	900
McCarty	20	920
Doneleys	40	960
McCallums	37	997
Paxtons	18	1,015
165 Mile Post	29	1,044
Gulkana	37	1,081
Copper Center	26	1,107
Tonsina	25	1,132
Teikhell	24	1,156
Saina	24	1,180
Thompson Pass	5	1,185
Wortmans	7	1,192
Valdez	19	1,211
Fort Liscum	8	1,219

	Intermediate.	Total.
NOME-VALDEZ SECTION—con.		
Fort Egbert branch	*Miles.*	*Miles.*
Gulkana	0	1,219
Talsona	20	1,239
Chistochina	20	1,259
Mentasta Pass	46	1,305
Tanana Crossing	51	1,356
Ketchumstock	55	1,411
North Fork	19	1,430
Fort Egbert	68	1,498
Boundary	12	1,510
CABLES.		
Seattle-Seward.		
Seattle	0	0
Sitka	1,085	1,085
Valdez	599	1,684
Fort Liscum	4	1,688
Seward	189	1,877
Sitka-Skagway.		
Sitka	0	1,877
Cape Fanshaw (no station)	211	2,088
Juneau	98	2,186
Haines Mission	106	2,292
Skagway	18	2,310
Cape Fanshaw-Ketchikan.		
Cape Fanshaw (no station)	0	2,310
Wrangel	63	2,373
Hadley	69	2,442
Ketchikan	28	2,470
Lawton-Worden.		
Fort Lawton	0	2,470
Fort Worden	42	2,512
Ward-Lawton.		
Fort Ward	0	2,512
Fort Lawton	12	2,524

RECAPITULATION.

l lines	1,403
less	107
es	2,524
Total	**4,034**

There are 45 telegraph offices and 10 cable offices in this system, of which 18 are money transfer offices. During the year the total of messages handled was 260,000 commercial and 50,000 official.

The line receipts amounted to $217,557.82 "this line," $19,354.57 "other lines," and Government business was handled to the value of $135,746.38. The largest amount of business done in any one month during the year was in August, 1906, when the receipts were $29,198.21, an increase over August, 1905, of approximately $11,000, and the smallest amount of business was in February, 1907, when the receipts were $11,476.41.

EXTENSIONS AND BETTERMENTS.

CABLES.

During November, 1906, the cable between Juneau and Sitka was cut at a point off Cape Fanshaw and looped into the cape, a test and repair station established, and from there a single cable was laid south to Wrangel, thence to Hadley, on Prince of Wales Island, thence to Ketchikan. Offices were installed at each of theese points, and the line was in working order by the end of December.

From the proximity to Fort Simpson, the projected terminus of the new Transcontinental Canadian Railway, and its position as the official port of entry to southeastern Alaska, the completed extension of the cable to Ketchikan is considered important.

LAND LINES.

Work on the Gakona-Delta cut-off has been carried forward vigorously, and the completion of the line by September next is anticipated. This cut-off begins about a third of the way up the old Valdez-Egbert trail, at a point named Gulkana, 130 miles from Valdez; thence it follows the course of the Fairbanks trail, blazed by the Alaskan Road Commission to Doneleys, where it leaves the trail and strikes due north to McCarthy, on the Tanana. Its general direction is northward, tending slightly to the west. It is 161 miles in length, attains an altitude of 3,500 feet at its highest point, and will necessitate the maintenance of four new stations. The opening up of this line will naturally be followed by the abandonment of the rough mountain section from North Fork to McCarty, dispensing with stations at Summit and Central, and reducing North Fork from a relay station to an ordinary one, Gulkana becoming a relay office and McCarty a depot of reserve supplies.

Detail statement of expenditures under army appropriation act approved June 12, 1906.

Appropriation		$179,000.00
Expended:		
248 miles submarine cable, Ketchikan extension	$131,412.73	
New equipment for the betterment of the Nome-St. Michael wireless-telegraph section and duplex cable instruments for Seattle-Sitka offices	1,517.80	
Instruments and office equipment for new offices on the Ketchikan section	756.87	
For the installation of new cable machinery and the purchase of new gear for U. S. cable ship *Burnside*	8,288.15	
For the payment of the salaries of the cable staff and incidental expenses of the U. S. cable ship *Burnside* while preparing for and laying the cable on the Ketchikan extension	7,118.93	
Supplies purchased for the Gakona-Delta cut-off and other betterments to the Alaskan cable and land line systems	5,943.38	
For the purchase of material and employment of labor in Alaska for the Gakona-Delta cut-off and other betterments to Alaskan land lines	21,799.14	
Equipment purchased to be used in the installation of wireless-telegraph stations at Circle City and Fairbanks, Alaska	2,163.00	
		179,000.00

The army appropriation act approved March 2, 1907, provides that of the receipts of the Washington-Alaska military cable and telegraph system that have been covered into the Treasury of the United States the sum of $190,000 is appropriated and made available for defraying the cost of such extensions and betterments of the system as may be approved by the Secretary of War.

CABLE SHIP BURNSIDE.

During the year the *Burnside* has cared for the cables connecting the defenses of Puget Sound in addition to her regular work on the Alaskan cable system.

Between Fort Worden and Fort Casey a 3-pair rubber insulated fire-control cable was laid. A faulty 5-pair cable between Forts Casey and Flagler was picked up and a 10-pair paper insulated lead-covered cable laid in its place. While engaged on the work at Fort Worden the *Burnside* repaired the Western Union cable between Port Angeles and Victoria, British Columbia, and in the vicinity of Albert Head, British Columbia.

During September and October a new combined pick-up and pay-out cable machine was installed. This machine represents the latest style of improved cable gear, and when used later gave excellent results.

In November and December, 1906, new cable instruments were installed at Fort William H. Seward, Skagway and Juneau, and cable laid from Cape Fanshaw south through Frederick Sound and Dry Straits to Wrangel. December 22 and 23 the sections from Wrangel to Hadley and thence to Ketchikan were laid, and the office at Ketchikan was opened for business on Christmas eve, 1906.

In February and March, 1907, the ground connection to the aerial alternate route between the Seattle office and Fort Lawton was laid.

The aerial leads in Seattle were replaced by underground conduits, and the new cable offices in the city of Seattle were installed.

During the year the *Burnside* was employed ninety-six days in cable operations away from port and laid approximately 200 miles of cable.

CABLE REPAIRS.

During the year the main cable was interrupted only a portion of one day, due to changes being made in the subway and office in Seattle. The branch cable from Skagway to Juneau was interrupted on one occasion by fouling from a ship's anchor off Douglas Island, and at another time there was injury to the shore end at Haines Mission during a severe storm. These interruptions were not due to the deterioration of the cable or preventable causes. The cables are in good working condition, but it is intended to make repairs and changes as follows:

Laying of shore end connection at Fort Seward and examining instrumental conditions; removal of Seward-Juneau cable from present position crossing anchorage south of Douglas Island and relaying it one-half mile farther south to clear anchorage; repair of cable at Cape Fanshaw; examination of cable crossing Dry Straits at low water and trenching of exposed pieces; covering shore end of Wrangel cable landing with concrete and protecting between high and low water marks with similar precautions at Ketchikan cable landing, and the duplexing of the Sitka-Valdez cable.

DUPLEXING THE SYSTEM.

Duplexing instruments were installed in Seattle last July and at Sitka in September. They have well served the purpose of handling the greatly increased business between these points. Instruments have been constructed and will be also installed at Sitka and Valdez and the duplexing of this section will be completed during the coming year.

TELEGRAPH RESERVATIONS.

There has been reserved and set apart during the year, for the maintenance of a cable station at Cape Fanshaw, the following described tract of public land:

By Executive order dated February 26, 1907—

It is hereby ordered that all public lands situated at Cape Fanshaw, Alaska, at the junction of Frederick Sound and Fanshaw Bay, nearly due east of Sitka, Alaska, which are included within metes and bounds described as follows, be, and hereby are, reserved from sale or other disposition and set apart as a military reservation in connection with the protection and maintenance of a cable station thereon, viz:

Commencing at the extreme westerly point of Cape Fanshaw at the top of a rock known and chartered as Astronomical Station, following the shore line past Canoe Point in a northeast and easterly direction to a stone monument on the north shore, approximately one and three-eighths (1⅜) miles east and one-half (½) mile north of the point of commencement; thence due south to a stone monument on the opposite south shore; thence following the shore westerly to the point of commencement at Astronomical Station at the extremity of Cape Fanshaw.

The reservations previously set apart are described in full in the report of the Chief Signal Officer for 1906.

WIRELESS OPERATIONS.

The wireless installations at Safety and St. Michael have given complete satisfaction during the year. Communication has been interrupted but once during this period, and then but for a few hours. Some interference, due to atmospheric discharges, has been experienced, but on the whole this section has continued to maintain the high standard of commercial efficiency reported in my last annual report.

Plans have been perfected for extensive wireless installations in Alaska with a view to ultimately furnishing a complete chain of wireless stations from Safety Harbor to the mainland of the United States. In entering upon this plan the Army has cooperated with the projected plans of the Navy. Money has been appropriated for the construction of a 10-kilowatt station at Fort Gibbon, which should serve to connect the existing wireless stations at Safety and St. Michael with the proposed naval station at Valdez, and thence via the proposed station at Sitka to Tatoosh Island, off the entrance of Puget Sound, and to San Francisco. This will ultimately give a complete chain of wireless stations, supplementing the land line and cable system from Norton Sound to the United States. It has been found impossible to secure the manufacture and assembling of the necessary apparatus for the Fort Gibbon station in time to have it installed during the present short season.

To supplement this system and to reach other important points in eastern Alaska, the Signal Corps has now in process of installation two wireless stations, one each at Fairbanks and Circle City. These stations are about 140 miles apart and are designed to have a radius of action of about 250 miles. The instrumental equipment has been purchased and built, the power being derived from a gasoline-engine-driven dynamo of 1-kilowatt capacity. The antennæ are to be suspended by the use of steel towers 175 feet in height, which have been shipped in small sections to be assembled on the ground. Special provisions have been made to insulate the bases of these towers by creosoted timbers, which will be housed to protect the bases from moisture.

The establishment of these permanent stations should enable communication to be maintained, if desired, with boats on the Yukon River as well as with smaller outlying stations and camps by using portable field sets, already designed, at these latter points.

The great cost of maintenance for land lines in the interior of Alaska makes wireless telegraphy particularly desirable in this remote and difficult region, and it is believed that the ultimate completion of this chain of wireless stations will not only greatly reduce the burdens of maintenance of the present land lines during the long winter season which now falls upon the American Army, but will also greatly add to the efficiency of the Alaskan telegraph system as a whole.

CONDITION OF ENLISTED MEN.

The enlisted men of the Signal Corps and of the line on duty in Alaska have continued to undergo hardships in the maintenance of the telegraph lines, and during the past winter they have had especially hard times, many of them being cut off for periods of from six to

eight months from all contact with civilization with the temperature ranging many degrees below zero. A number of men were severely frozen and during the recent breaking up of the river, which washed away a 100 miles of lines, the men worked in ice cold water for days in order to restore communication.

Without the material assistance of the line of the Army it would have been impossible to construct and maintain the Alaskan telegraph system.

A certificate of merit has been awarded by the President to a member of the Corps for courage and intelligence displayed in rescuing three comrades with badly frozen feet.

The fiscal responsibility of the men has in many cases been large, running into transactions amounting to thousands of dollars per month, thus subjecting them to a great temptation. Only two cases, however, of embezzlement occurred during the year, the loss to the United States amounting to $361.69.

It is believed that such extreme conditions of service as exist in Alaska claim a reward in the way of more adequate compensation, and an estimate has been submitted for extra duty pay to enlisted men of the Signal Corps and of the line of the Army employed in Alaska at the rate of 35 cents per day. These special inducements are considered necessary to enable the Army to obtain and retain men competent to operate and maintain this system.

AN ADDITIONAL CABLE BETWEEN SEATTLE AND SITKA.

Attention is again invited to the necessity of duplicating the main cable between Seattle and Sitka. The cable now in existence there has worked successfully since 1904 and is at present in perfect condition. For the transaction of business it is ample, but it is the practice of most of the cable companies, if possible, to have a duplicate cable in case of accident. This cable can only be repaired between the months of June and October, and if late in the autumn anything should happen to it in the deep sea it would be next to impossible to repair it before the following summer. Such a cable would cost about $660,000. It is merely a question of whether is is worth this amount of money to insure communication over this route at all times.

It would take about five months to make and deliver the cable at Seattle, so that to insure its being laid the following summer it would be necessary to have authority for its purchase not later than February.

PHILIPPINE ISLANDS.

The military system of land lines and cables in the Philippine Islands has been under the supervision of the chief signal officer, Philippines Division. There have been no notable changes in the administration of Signal Corps affairs in this division during the past year, and the number of offices and the mileage of land lines and cables remains practically as stated in my last annual report.

Pursuant to paragraph 7, Special Orders, No. 80, Headquarters Philippines Division, dated April 22, 1907, the office of the chief signal officer, Department of Luzon, was discontinued April 24 and the records placed in the office of the chief signal officer of the division, who assumed control of department affairs.

TRANSFER OF LINES.

This subject has been before the Philippine Commission and the commanding general of the Philippines Division, who have drawn up and forwarded to the War Department, April 4, 1907, a detailed plan looking to the transfer of the military telegraph system to the civil government. The provisions of this agreement were approved by the Secretary of War by cable May 3, 1907.

Notwithstanding definite instructions looking to the transfer, the progress up to the present has been slow, and it is believed that, due to the lack of trained personnel, the entire transfer as contemplated in the instructions will not be consummated for a considerable period of time.

Land lines, cable, and office supplies to the value of $18,562.28 have been transferred to the insular government during the past year. In addition to this, the property at Misamis has been transferred to the civil government, but the invoices have not yet been received and the value can not be shown.

TELEGRAPH AND CABLE SYSTEM.

On June 30 there were 6,438 miles of land lines and 1,437 miles of cable in operation in the Philippine Islands, of which 1,572 miles of land lines and 1,217 miles of cable are operated and maintained by the Signal Corps; 118 miles of new lines were constructed by the Signal Corps during the year in addition to the large amount of reconstruction involved.

In addition to the telegraph and cable system, the Signal Corps operates and maintains 23 local telephone systems, representing 327 miles of line and 396 telephones.

The reconstruction of through lines on the Leyte and Capiz-Iloilo section by replacing iron poles that are rusting through at the earth surface is expected to be completed before the rainy season arrives.

From July 1, 1906, to May 31, 1907, 240,155 messages were sent and 232,263 relayed.

CABLE SHIP LISCUM AND CABLE LINES.

The cost of maintaining the cable system during the past year compared with 1906 is considerably less. The *Liscum* was engaged in cable-repair work thirty days, at a cost of $208.06 per day, or a total of $6,241.80. These repairs were confined principally to the Zamboango-Malabang cable, which was interrupted four times, caused by the action of the cable over the rocks, causing complete breaks. To remedy this, in view of the satisfactory service being rendered by the wireless stations at Zamboanga and Jolo, equipment is being prepared for the installation of a similar wireless station at Malabang.

As a result of the numerous interruptions to the Dumaguete-Misamis cable near Misamis the cable connecting these points was run direct to Camp Overton, the change being made by the *Liscum* December 15, 1906, and has worked satisfactorily since that date.

One cable was laid during the year—that connecting Tacloban with San Antonio, Samar, a point 3 miles west of Basey. This was considered necessary to afford communication with troops stationed

on the west coast of Samar who are now reached by telephone from Basey.

Two cables (Los Banos-Malahi and Calamba-Los Banos) were recovered from the Laguna de Bay and the Corregidor-Mariveles and Naic-Corregidor cables were transferred to the civil government.

The following Signal Corps cables are in good working order: Ormoc-Cebu, Guinayangan-Pasacao, Dumaguete-Camp Overton, Iligan-Cagayan, Dumaguete-Oslob, Catbalogan-Carigara, Catbalogan-Calbayog, Argao-Loon, Malabang-Parang, Calapan-Batangas, Calapan-Boac, Palanog-Calbayog, Palanog-Sorsogon, Jolo-Siassi, Milagros-Capiz, Misamis-Iligan, Palanog-Romblon, Romblon-Boac, Panay-Guimeras, Camp Keithley-Camp Vicars, Tacloban-San Antonio, Malabang-Zamboanga.

The civil government cables, likewise in good order, are the following: Legaspi-Bacon, Maasin-Surigao, Cuyo-San Jose, Molinao-Calolbong, Corregidor-Naic, Corregidor-Mariveles.

ENLISTED MEN.

The enlisted strength of the Signal Corps in the Philippines has varied from 314 men at the beginning of the fiscal year to 211 at the end. Thirty-seven men have been discharged in the islands, 13 of whom reenlisted; 25 men were obtained by transfer from the line and 8 by transfer from the United States.

One hundred and thirteen men have been returned to the United States during the year—72 for duty, 2 for medical treatment, and 39 for discharge. One man died in the Philippines during the year of cerebral concussion, caused by a fall from a government vehicle during a runaway accident in Manila.

Of the 211 enlisted men in the Philippines on May 31, 1907, 77 have been there from three to eight years, divided as follows: One for more than eight years; 9 for more than seven years; 15 for more than six years; 11 for more than five years; 22 for more than four years; 19 for more than three years.

At present 144 out of the 211 men in the Philippines have been there at least two years, the usual tour of duty, but it has been impossible to relieve these men on account of not having available men to replace them.

MANILA TELEPHONE SYSTEM.

The installation of a commercial telephone system in Manila has permitted a partial dismantlement of the Signal Corps system, which at the beginning of the year had 211 telephones in circuit and 227 miles of military telephone lines in and about the city of Manila, carried partly on military and partly on insular poles. One hundred and thirty-nine of these telephones have been recovered and will be available for use at the various posts throughout the division, as authorized by existing orders. The 73 telephones remaining in circuit connect the various staff departments for administrative purposes.

The greater portion of the aerial cable, both 10 and 20 pair, recovered from the Manila telephone system has been used at Fort William McKinley in connection with the installation of an annunciator sys-

tem on the target range authorized by the division commander. In the recent competition held at that post the system is reported as having rendered invaluable service.

EXPENDITURES.

The total disbursements made by the disbursing officer amounts to $87,222.68, covered by 576 vouchers paid by 746 checks and in part by cash.

Signal Corps property was received from the United States to the value of $10,245.32; issues were made in the division amounting to $36,194.31.

During the year 294 Signal Corps property returns of officers and enlisted men serving in the division were examined, the former being forwarded to Washington and the latter remaining on file in this office.

CUBA.

The operations of the Signal Corps for this fiscal year date from October, 1906, during which month a Signal Corps force was sent to this island as a part of the army of Cuban pacification. This force was under the general direction of the chief signal officer, army of Cuban pacification, and at its maximum strength comprised 4 officers and 153 enlisted men.

Arrangements were made immediately upon arriving at Havana for establishing lines of information, mainly telephone, between the centers of activity of the army, such as points of debarkation, supply depots, and the various camps and staff headquarters. This work comprised—

1. The establishment of a telephone system with intercommunicating trunk lines from the headquarters, army of Cuban pacification, to Camp Columbia and the city of Havana.
2. The operation of the Cuban Government telephone lines between the above points.
3. The receipt and delivery of Government messages over Cuban Government telegraph lines wherever American troops were stationed on the island of Cuba.
4. The construction of rapid field lines and other means of information between any other points which the occasion might require.

Of the above items, Nos. 1 and 2 form the most important work of the Signal Corps. In addition to this, a large amount of field work has ben done looking to the development of temporary lines of intercommunication and control and of the wireless telegraph.

SEMI-PERMANENT LAND LINES.

The more important points of the army organization, embracing the headquarters army of Cuban pacification, Marianao, Camp Columbia, and Havana, were connected by telephone lines conforming very closely to standard construction for this class of work, using where necessary the lines of the Cuban Government and of the local commercial telephone companies wherever convenient. This construction was substantial in character and designed to give reliable service for an extended period of time. Where it was impracticable

to construct military lines arrangements were made with the commercial companies for the prompt receipt and delivery of Government messages. This service proved to be very satisfactory and assisted materially in the administration of the Army. The Signal Corps provided operators for these lines, and in addition sent operators to accompany the troops stationed in the various parts of the island for convenience in handling official business.

In many cases repairs were made to Cuban Government lines to put them in serviceable condition and assist in handling traffic.

FIELD LINES.

The field lines were temporary in character and were constructed by laying field or buzzer wire on the ground or, where time permitted, by erecting it on lance poles. These lines were designed to be used for a day or two only and provided such lines of security and information as the local conditions might require. The field induction telegraph has been developed for use on such lines, usually of low insulation and high resistance, and has been found to serve the purpose very satisfactorily.

WIRELESS TELEGRAPHY.

The characteristic feature of the Signal Corps work in connection with the army of Cuban pacification has been the extension and successful use of wireless telegraphy to replace the telephone and telegraph where lance or field wire lines would ordinarily be used, and of still more importance in establishing communication between points which could not be connected by wire or cable lines. The apparatus furnished by the Signal Corps for this work consisted of portable sets designed to be carried on the march by 3 mules. The light weight of these sets allows of quick movement and easy and rapid erection by a small detachment of men. The portable mast provided was 60 feet in height and covered an ordinary working radius of 20 miles under the most unfavorable conditions. One set was installed in a semi-permanent manner with a slightly higher mast at Camp Columbia, and afforded regular communication with Key West, a distance of 90 miles, and Isle of Pines, a distance of 92 miles. This station also received the business of the Navy in the harbor and transferred it to the land lines, thus establishing communication between the land and sea forces.

During February, 1907, at the request of the provisional government, the Signal Corps repaired the Cuban wireless telegraph equipment in the stations at Havana and on the Isle of Pines. This equipment had been installed for several months, but up to that time had not given satisfactory service. These stations afterwards proved to be of material assistance in the transaction of Government business by working in conjunction with the field apparatus and enabling the latter to be adjusted to maximum efficiency.

A detachment of the Signal Corps company was organized as a wireless-telegraph platoon and given special drill and instructions in this class of work. This was found necessary in order to provide a body of men trained to work in conjunction with each other and who

should be familiar with the special conditions attending the operation of the portable wireless sets.

In addition to the apparatus made by the Signal Corps, purchases of commercial apparatus have been made from time to time, and comparative tests of efficiency and other features of operation were made under service conditions. This has been of great value in indicating lines of improvement in design and enabling the Signal Corps to improve materially its equipment in many respects.

Many improvements in details of equipment have been suggested by this field service, and it is believed, with such advances in the art as are now in view, this form of wireless equipment will be found to be an invaluable adjunct to an army in the field.

UNITED STATES.

The operations in the United States include the fire-control and fire-direction systems of the Coast and Field Artillery, the United States Signal School, the Signal Corps posts, the equipment of rifle ranges, the management of military telegraph lines, the establishment of post telephone exchanges, the signaling equipment of the National Guard, ballooning work, preparation of manuals, and the training of recruits in visual, electrical, and telephone work, and especially in suitable provisionary methods for active and efficient work in case of war or other emergency.

The duties of the Signal Corps have been as satisfactorily and efficiently performed as the limited force and the appropriations would permit.

SIGNAL CORPS POSTS.

Separate Signal Corps posts to cover the general needs of the service in each of the geographical divisions of the United States have been maintained. They are located at Fort Omaha, Nebr., Fort Wood, New York Harbor, and Benicia Barracks, Cal.

FORT OMAHA, NEBR.

This Signal Corps post is located within the city limits of Omaha and is maintained as a general depot of supplies for Signal Corps materials, and also as a station for Companies B, D, and H, Signal Corps. Company I is on detached duty in Cuba. In addition to the general depot of supplies, Fort Omaha serves as a rendezvous for recruits entering the Signal Corps, and also as a technical school for the preliminary training of enlisted men.

The reservation contains an area of 82.5 acres. Fort Omaha was primarily established for the instruction of the enlisted men of the Signal Corps, and a Signal School is maintained regularly at this station.

FORT WOOD, NEW YORK HARBOR.

At Fort Wood a special school of instruction in fire-control work, submarine cables, etc., has been established, and this post is a depot for all fire-control material for the Atlantic and Gulf. This post is also the home station of the cable boat *Cyrus W. Field.*

Company G, Signal Corps, is stationed at this post.

BENICIA BARRACKS, CAL.

At Benicia Barracks is stationed Signal Corps Company E. It is used as a school of instruction for men of the Signal Corps and is a rendezvous for Signal Corps men going to and returning from the Philippines and Alaska. It is proposed during the coming year to transfer this post to Fort McDowell, Angel Island, where, in connection with the purpose mentioned above, it will also be used as a depot for fire-control work for the Pacific coast.

The Quartermaster's Department has under construction a general depot of supplies at Fort Mason, Cal., wherein provision is being made for the property depot of the Signal Corps for the Pacific coast in conjunction with the depots of supplies for the other supply departments.

UNITED STATES SIGNAL SCHOOL AT FORT LEAVENWORTH.

The close of the second year since the foundation of this school finds it in a satisfactory condition. The object of the Signal School is to prepare the officers of the Signal Corps for the better performance of the active duties of their profession, to provide instruction in signal duties for such officers of the line as may be designated therefor, to make researches and practical experiments in such subjects as relate to the duties of the Signal Corps, and to disseminate information so obtained.

The student officers consist of officers of the Signal Corps, not exceeding 5, officers of the Artillery Corps, not exceeding 4, and such officers from the Infantry and Cavalry School as are recommended by the academic board to take the course, based on their competitive standing in that school. The course of study comprises four departments, namely, the department of field signaling, the department of signal engineering, the department of topography, and the department of languages. It has been the effort in the course of instruction at this school to make it eminently practical in every respect, aimed to fit an officer for the active duties of a signal officer with a mobile army in the field, besides furnishing him with a thorough foundation for special duties with the Signal Corps.

Company A, Signal Corps, stationed at Fort Leavenworth, is on duty in connection with the practical instruction at the Signal School proper, as well as the other service schools at that station. This company is trained and equipped especially for service with troops in campaign and has reached a high state of efficiency in these duties.

COMBAT TRANSPORTATION.

Considerable advance has been made during the past year in the design and test of the technical vehicles and equipment required for field service. At present this transportation comprises the following:

Automatic field-wire wagons (pintle type).
Automatic reel carts.
Lance trucks.
Instrument wagons.
Construction wagons.
Standard squad boxes, for pack transportation.
Standard pack chests, for pack transportation.

DRILL REGULATIONS FOR SIGNAL TROOPS.

At present there is no uniform practice in forming and handling signal troops, and the necessity for some authoritative regulations has been imperatively felt for some time. Under orders from the Secretary of War, the manuscript for such drill regulations has been prepared and tested by the faculty and student officers of the Signal School during the past year for tentative and provisional publication until such time as experience at the Signal School, at Signal Corps posts, and elsewhere may justify its reissue in permanent form.

Through the cooperation of the United States Staff College and the Infantry and Cavalry School with the Signal School, a series of terrain exercises, staff rides, and maneuvers has been carried out, which, it is believed, has resulted not only in the mutual benefit and instruction of the student officers of the three schools, but also has demonstrated a permanent advance in the tactical methods of handling and controlling troops in campaign through field lines of information and control.

It has become evident to the authorities at Fort Leavenworth that at least a battalion of two companies of signal troops is required for the present needs of practical instruction at the service schools.

Plans and specifications have been prepared and forwarded for barracks for two companies of signal troops and the necessary vehicle sheds, stables, and storehouses. These proposed buildings are to be located in the college section of the post.

FIRE-CONTROL INSTALLATIONS.

SOUTHERN ARTILLERY DISTRICT OF NEW YORK.

The standard fire-control installations at Forts Wadsworth and Hamilton were completed in September, 1906. These are the most complete fire-control installations which the Signal Corps has undertaken up to the present time. They embody the latest improved apparatus, including special power equipment for telautographs and aeroscopes, and the work of installation has been accomplished in accordance with a high standard of electrical construction.

During the year an installation was begun at Fort Hancock and is now approaching completion.

EASTERN ARTILLERY DISTRICT OF NEW YORK.

The installations at Forts Schuyler and Totten have been completed and transferred to the Corps of Artillery.

ARTILLERY DISTRICT OF BOSTON.

The installations at Forts Revere, Strong, and Warren have been practically completed and transferred to the Corps of Artillery for drill purposes.

The progress of the work at Forts Heath, Banks, Andrews, and Standish is considered satisfactory and completion is expected in the near future.

ARTILLERY DISTRICT OF PORTLAND.

The fire-control installations at the forts in this district are proceeding in a manner satisfactory to the Chief Signal Officer of the Army, and it is thought they will be completed by the end of the fiscal year 1908.

ARTILLERY DISTRICT OF PUGET SOUND.

The installation of the standard fire-control scheme at the three posts, Forts Casey, Worden, and Flagler, was begun in the early part of 1907, and, while considerable work is yet to be done, rapid progress is being made.

WORK IN OTHER ARTILLERY DISTRICTS.

The electrical division now has in preparation plans for the work in San Francisco Harbor, which is next to be taken up, and which will form the most important fire-control undertaking of the Signal Corps during the coming year. Provisional installations were completed at Forts Worden, Stevens, Columbia, and Rosecrans, and Key West Barracks, Fla. The permanent systems in the artillery districts of Baltimore, the Potomac, and the Chesapeake have, in general, given little trouble for maintenance. The aerial lines at Fort Monroe have been largely rebuilt, indicating the unreliability of this form of line construction.

IN GENERAL.

Several changes have been made in type apparatus and minor details of the standard equipment modified. The distributing switchboard has been superseded by the station switching panel and the wooden terminal box for primary stations by the terminal cabinet. A form of type printing machine has been submitted to the artillery board at Fort Monroe for comparative test with the telautograph. The results of the board's tests in this matter have not yet been made known. All apparatus and material for fire-control work is purchased under specifications and drawings compiled in the electrical division and inspected by that division when purchase is made from local manufacturers.

The extent and importance of the fire-control work of the Signal Corps has outgrown the permanent electrical construction force during the past year, and temporary employees have been resorted to in many cases. This class of labor is not as satisfactory as permanent employees who become more valuable as the period of employment is extended and more experience gained in Signal Corps methods of construction, and this class of labor is only recommended in cases of emergency.

FIRE-CONTROL CABLE SHIP.

The cable boat *Cyrus W. Field*, assigned for cable work in this Department, was employed in actual cable work two hundred and fifty-seven days of the year, and undergoing repairs on eight occa-

sions, occupying her one hundred and eight days. However, the crew of the ship were almost continually employed on cable work while the boat was in for repairs.

Of the 70 cables in the department, 12 were laid during the year and 20 repaired, 6 of them two times.

A new seagoing cable ship for the use of the Signal Corps on the Atlantic seaboard has been provided for by Congress in an appropriation for the Quartermaster's Department for the fiscal year ending July, 1908.

FIRE-CONTROL EQUIPMENT FOR FIELD ARTILLERY.

During the past year the Chief Signal Officer of the Army has cooperated with the Chief of Artillery in determining upon a suitable equipment for visual and electrical communications for use of field batteries, battalions, and regiments.

The extreme portability and compactness required for apparatus of this character has made it difficult to fulfill the conditions, but it is believed that these have now largely been met.

In accordance with the recommendation of the Chief of Artillery, and following in general the plan outlined by the Field Artillery board at Fort Riley, Kans., a series of equipments in chests for battery, battalion, and regiment have been issued, comprising in the electrical equipment field buzzers, which are used as telephones with the necessary accessory material. Two kinds of wire are issued for the flying lines which are used, the first being a fine insulated buzzer wire on half-mile spools, which can be paid out and taken up by means of a hand reel. The other wire is very strong insulated wire, weighing about 70 pounds per mile. This equipment has proven satisfactory.

MILITARY DEPARTMENTS.

Under paragraph 1594, Army Regulations, department commanders supplement the operations of the Signal Corps by such instruction in visual military signaling as they deem necessary for the public service. The instruction in the line of the Army contemplates that each independent command should have at least two enlisted men able to exchange messages in the army and navy code at short distances by flag.

Of the nine departments in the United States, it has been possible to supply only 5 throughout the year with a chief signal officer, viz, East, Gulf, Missouri, California, and Columbia. The duties of chief signal officer in the four other departments, viz, Lakes, Dakota, Texas, and Colorado, were performed during the year by officers of the line of the Army detailed as aids to department commanders.

The departments in which fire-control installations are in progress have been supplied with an officer of the Signal Corps as signal officer.

Special attention has been given to fire-control work, as stated elsewhere, in the Departments of the East, the Gulf, California, and the Columbia.

SIGNAL CORPS OF THE NATIONAL GUARD.

There has been an increase of interest by the Signal Corps of the National Guard in signaling. The importance of military lines of information has been generally recognized by the organized militia of the United States. Notwithstanding this, the National Guard has been slow in obtaining standard equipment for the use of Signal Corps troops in the field under the acts of Congress making annual appropriation for arming and equipping the militia.

There exist, as shown by the last militia report of the War Department, Signal Corps organizations, with commissioned officers and enlisted men in the States of California, Colorado, Connecticut, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Montana, Nebraska, New Hampshire, New Jersey, New York, Ohio, Oklahoma, Rhode Island, South Dakota, Texas, Utah, Washington, West Virginia, and the District of Columbia. A detachment under a noncommissioned officer has also been organized in the Territory of Arizona.

Frequent applications have been made for Signal Corps detachments of the regular establishment to serve in encampments of the National Guard.

WIRELESS-TELEGRAPH WORK.

The Quartermaster Department has been furnished with four marine wireless sets for transport service on the ships in the Pacific running out of San Francisco Harbor. These sets have a capacity of 3 kilowatts, and were designed in the electrical division, built in the test room, many of the parts being made in the instrument shop. One set, similar in general outline to the above, was made up in a similar manner and is now installed at Fort Wood.

Coast-defense service has taken the form of a 1-kilowatt outfit to be installed in the district signal stations. These sets are designed for a range covering the district in which they are set up, and operate in conjunction with small portable sets, which will be taken on board target-towing tugs for target practice. It is not desired that these sets provide interdistrict signals on account of interference with the work of the Navy Department. These sets are being installed at Forts Levett, Andrews, Wright, Hancock, and Worden. In addition, the apparatus at Fort Totten is being overhauled and a mast erected. The material for the sets at the other posts is also being purchased, but as the buildings are not done the equipment can not be installed at the present time. A complete line of field wireless apparatus has also been designed. This comprises an instrument equipment contained in one carrying case, portable masts, and storage batteries, a complete set being carried on three pack mules. A charging plant is provided to charge the storage batteries of all the wireless sets of each brigade.

Plans have been perfected and the material ordered for wireless installations at the Signal Corps post at Fort Omaha, Nebr., at the service schools at Fort Leavenworth, Kans., and at Fort Riley, Kans. The installation for Fort Omaha will be of a permanent nature of 3-kilowatt capacity, the antennæ being supported by a steel tower 175 feet high. At Fort Leavenworth and at Fort Riley portable wagon

sets will be provided, of 1-kilowatt capacity. The establishment of these three stations, connecting the two largest military posts in the Middle West with the Signal Corps post at Fort Omaha, which is also connected with department headquarters in the city, should not only give great opportunities for the instruction of officers and enlisted men at these points, but will also provide in emergency military lines of intercommunication between the department headquarters and these two important military stations.

MILITARY AERONAUTICS.

During the past year investigation and experiments have been made with a view of securing hydrogen in large quantities at low cost. The results were not satisfactory, and it has been decided to establish a plant for producing hydrogen by the electrolysis of water. Orders have already been placed for the necessary electrolytic cells and the electrical machinery. This plant will be established at Fort Omaha, Nebr., and the Quartermaster Department has already prepared plans for a suitable building to inclose this hydrogen plant, and also a large steel balloon house of a size sufficient to fill hydrogen balloons and to carry on experiments with any size and type of dirigible balloons or flying machines which may in the future be presented for trial. Hydrogen for captive and dirigible balloons will be compressed in tubes at high pressure at this Omaha plant and shipped to any point where required for use, this method being considered preferable to using portable generators.

The Signal Corps has recently purchased a complete military captive balloon, with all appurtenances, with a capacity of 300 cubic meters, and also an ordinary spherical balloon, with a capacity of 2,200 cubic meters, which was designed to be filled with coal gas and used for preliminary instruction of officers and enlisted men of the Signal Corps in the elementary principles of aeronautics. This balloon on the trial trip made a successful voyage from Washington, D. C., to Harrisburg, Pa., a distance of 104 miles, in four and one-half hours.

In addition to the installation of a gas-generating plant and balloon house at the Signal Corps post, Fort Omaha, Nebr., it is also intended to provide practical instruction in military aeronautics suited to the needs of the three service schools at Fort Leavenworth, Kans.

Paragraph 34, General Orders, No. 145, War Department, August 16, 1906, now requires theoretical and practical instruction in aeronautics at these schools, but the instruction has thus far been limited to a theoretical study of the subject, due to a lack of suitable equipment for this station.

SIGNAL CORPS IN MANEUVERS.

The mobilization of the troops of the Regular Army, together with the militia of several States in brigade camps in various parts of the country during the summer of 1906, has further demonstrated the insufficiency of the strength of the Signal Corps to meet the general demands of the line of the Army for military lines of information.

By collecting every officer and soldier available, it was only possible to send to each camp as follows:

Chickamauga Park, Ga., 1 officer and 41 men; Mount Gretna, Pa., 2 officers and 42 men; Austin, Tex., 1 officer and 29 men; Fort Riley, Kans., 2 officers and 49 men; Fort D. A. Russell, Wyo., 1 officer and 28 men; American Lake, Wash., 4 officers and 50 men; Indianapolis, Ind., 2 officers and 56 men.

The duties of the Signal Corps in maneuvers are divided into camp duties and field duties. The field duties consist solely in establishing and operating tactical lines of information, which as nerves of the maneuvering forces must be mobile; and therefore to perform this duty satisfactorily the field companies of the Signal Corps must be uniformly organized, fully equipped, and carefully trained for this work and this work alone. Furthermore, the commanding officers of troops must have a keen knowledge of the use of tactical lines of information, which comes only from the study of their power and limitation and their practical application to the problems in hand.

Each maneuver camp in the future should be supplied with the proper proportion of field signal companies in order to secure the field instruction of all the troops engaged.

MILITARY TELEGRAPH LINES IN THE UNITED STATES.

The following military telegraph lines were in operation at the end of the fiscal year:

From—	To—	Length.
		Miles.
Huachuca, Ariz	Lewis Springs	19.0
Fort Bayard, N. Mex	Bayard	3.0
Holbrook, Ariz	Fort Apache	92.0
Fort Myer, Va	Fort Washington, Md	21.5
Fort Clark, Tex	Spofford Junction	9.5

The total number of messages handled was 12,731.

The following military lines have been discontinued during the year:

From—	To—	Length.
		Miles.
1. Fort Ringgold, Tex.[a]	Samfordyce, Tex	22.0
2. Fort Bliss, Tex.[b]	El Paso	6.0
3. Fort Niobrara, Nebr.[c]	Valentine	4.5
4. Fort Assinniboine, Mont.[d]	Assinniboine	1.25

[a] Line discontinued on account of the abandonment of Fort Ringgold as a military post.
[b] Fort Bliss-El Paso line changed from telegraph to telephone line.
[c] Operation of Niobrara-Valentine line discontinued on account of the abandonment of Fort Niobrara as a military post.
[d] Operation of line to Assinniboine discontinued on account of the abandonment of Fort Assinniboine as a military post.

There are 54 telegraph offices at military posts in the United States operated by enlisted men of the Signal Corps and line soldiers who are operators. These offices are short branches of commercial lines brought into the posts to facilitate telegraph service; they collect no

"this line" tolls and therefore render no report of line receipts. The status is the same as branch offices of commercial companies.

There have been collected for transmission of commercial telegrams over military lines in the United States during the fiscal year tariffs amounting to $534.97. This amount has been deposited in the Treasury of the United States, as required by law. In addition thereto there has been collected and transferred to connecting commercial companies the sum of $4,672.32, covering the tariff for messages transmitted by such companies over their lines. A total of 52,280 messages were handled. This does not include the messages over the Alaskan system, transferred to and from commercial companies at Seattle.

POST TELEPHONE SYSTEMS.

The telephone systems at Coast Artillery posts are considered part of the defenses and provided from the special fire-control appropriation. There are 71 interior posts in the United States, of which 59 have a Signal Corps post telephone system completed; the remainder are in progress. During the year there has been expended for this purpose about $30,000. Aerial construction is used at the majority of the posts, but the future policy will be to install subterranean cables in conduit for all the larger posts which are to be maintained permanently. Whenever subterranean construction is installed the wiring provides for one pair of conductors to each set of quarters, barracks, and other buildings where a telephone may in future be required.

TARGET RANGES.

There are 57 posts in the United States which have been provided with standard cable and telephone equipment for rifle ranges. Of the posts not so equipped, some have only a temporary range, which makes subterranean cable construction inadvisable, and some of the Coast Artillery posts have only short ranges and use temporary lines during the practice season.

OFFICE OF THE CHIEF SIGNAL OFFICER.

There has been a gradual increase in the volume of business transacted during the year, but no increase in the number or compensation of the force employed.

The rooms assigned to this Bureau are situated in four different buildings, necessitating delay in the transaction of business and preventing centralization of official records. With the assignment of additional office rooms in the same building with the main office of this Bureau and with a slightly increased clerical force a more complete and consolidated record of official communications could be made than at present. Until this done it is not deemed practicable to make any further improvements in present methods.

During the past year there have been numerous changes in the clerical force due to the employees seeking to better their condition by transfer to other Departments, where they believe better opportunity for promotion is afforded, and to resignations to accept positions outside of the civil service.

Past experience has demonstrated that it is almost impossible to obtain competent clerks to fill the lower grades in this office. Estimates for the coming year have been submitted with a view to enable this office to rearrange the clerical force, so as to make the entrance salary $1,000 per annum. This is effected by dropping one $840 position, without any increase over the present appropriation.

The services of the officers and employees on duty in this office have been satisfactory.

DISBURSING DIVISION.

The following statement shows the volume of the work handled during the fiscal year:

Orders placed	2,389
Vouchers audited and paid	2,912
Transportation requests prepared	1,281
Letters and miscellaneous correspondence	19,370
Advertisements for proposals issued (about 5,000 copies being distributed)	194
Accounts current from officers handling Signal Corps funds, covering 15 appropriations, examined	315
Returns of Signal Corps property examined	1,375

There was a large number of miscellaneous papers handled in connection with the items mentioned which are not included in this statement, it being impracticable to keep an accurate record of them.

The following shows the state and disposition of appropriations aggregating $1,358,560.07:

Title of appropriations.	Disbursed by this office.	Transferred to other officers.	Balance unexpended.	Total.
1. Signal Service of the Army, 1907	$216,062.21	$58,749.60	.....	$274,811.81
2. Fire control at fortifications	108,693.11	71,182.50	$611,128.97	791,004.58
3. Washington-Alaska military cable and telegraph system, 1907	142,631.00	36,369.00	.....	179,000.00
4. Emergency fund, War Department (act of Mar. 3, 1899)	42,785.72	7,214.28	.....	50,000.00
5. Replacing signal stores destroyed by fire at Seattle, Wash., 1906-7	15,000.00	.....	.....	15,000.00
6. Replacing military stores destroyed at San Francisco, Cal., 1906-7	9,965.75	.....	.....	9,965.75
7. Coast artillery fire-control installations	3,423.57	.....	28.00	3,451.57
8. Military telegraph and cable line, Forts Dade and De Soto, Fla	4,550.00	.....	.....	4,550.00
9. Repairs of deep sea military cables	2,781.19	.....	21,446.07	24,227.26
10. Board of Ordnance and Fortifications	1,992.00	.....	1,558.00	3,550.00
11. Encampment and maneuvers, Organized Militia, 1907	120.00	.....	2,880.00	3,000.00
Total	584,004.55	173,515.38	637,041.04	1,358,560.97

An important improvement has been adopted in the method of handling property returns, obviating the necessity for the use of the cumbersome and voluminous abstracts heretofore rendered.

On March 1, 1907, the examining division of the Signal Office was abolished and the work theretofore performed in that division assigned to the disbursing division.

The work of this division has been extremely heavy during the fiscal year, having increased about 50 per cent.

ELECTRICAL DIVISION.

The development of a complete line of wireless-telegraph apparatus has largely occupied the attention of the electrical division during the past year, forming the distinctive feature of the work of this division.. This work has caused unusual demands on the drafting force, test room, and instrument shop, all of which have proved equal to the occasion and have been found to be indispensable to the proper conduct of this class of work.

The original engineering in connection with fire-control work and apparatus has largely been completed, attention now being given to the perfection of details rather than any radical departure in the types of equipment and methods of installation.

The drafting room has produced a large number of drawings and has advanced the quality as well as the quantity of its work.

The instrument shop has proved an invaluable adjunct to the development of new apparatus, especially in the case of wireless telegraphy, where there is little in the way of precedents to indicate the lines of progress. All special pieces of apparatus are now first constructed in the instrument shop and when finally approved are submitted to the manufacturers as models both as to design and workmanship.

The test-room force has been increased to meet the demands for a large amount of special construction undertaken by this force embracing apparatus special in design and of such a nature that it would be impracticable to obtain it by purchase. All of the wireless telegraph equipment which has been sent out by the Signal Corps during this year has first been assembled and tested in the Signal Corps test room.

Extensive additions have been made to the equipment of the photograph room and the scope and usefulness of this branch of the work have been widely extended. A complete line of photograph equipment for identification purposes for the use of the general Army has been perfected and has attracted much favorable comment.

TELEGRAPH DIVISION.

During the year this division has received and acted upon 1,088 requisitions for Signal Corps property, in addition to keeping records pertaining to target ranges, post telephone systems, and military telegraph lines in the United States, Alaska, and the Philippines. At the beginning of the fiscal year a new system of property administration was put into effect, whereby this office is advised daily of the stock on hand at the general depots of supply.

BOARD ON EQUIPMENT AND AWARDS.

In order to insure steady improvement in equipment and economical administration of the Signal Corps there has been continued a board on awards and equipment. These officers examine all bids on Signal Corps material with a view to insuring the delivery of thoroughly reliable apparatus of first-class workmanship and material.

They further consider from time to time improvements in methods and in apparatus suggested by officers and men of the Signal Corps or

others, and supplement these recommendations by careful and comparative studies of similar apparatus in commercial or foreign military use.

VISUAL SIGNALING.

To enable organizations in the Army to comply with paragraph 1594, Army Regulations, the Signal Corps has continued to issue a standard visual signaling outfit, consisting of two 2-foot flag kits and two field glasses. This outfit has been issued to 146 companies of infantry, 85 troops of cavalry, 21 batteries of field artillery, 48 companies of coast artillery corps, and 2 companies of engineers, a total of 302.

A number of sample field glasses were sent to the field artillery board at Fort Riley for recommendation as to the most suitable type for issue to the Field Artillery. That board recommends a day and night field glass having 4½ night and 6½ day power. The Signal Corps will in the future supply this type of glass to the Field Artillery. The smaller day and night glass, 3½–5½ power, will be furnished to the other arms of the service.

A number of sample field glasses were also sent to the cavalry board, but their recommendation did not call for any special type.

SIGNAL CORPS MANUALS.

During the year Signal Corps Manual No. 8, "Apparatus for Fire Control and Direction," has been received from the printer and distributed through the military information division of the General Staff to officers of the Coast Artillery Corps.

THE INTERNATIONAL WIRELESS TELEGRAPH CONGRESS.

The Chief Signal Officer of the Army was detailed to represent the War Department in the wireless congress which was held in Berlin from October 3 to November 3, 1906, in which the following nations participated:

Germany.	Egypt.	The Netherlands.
United States.	Spain.	Persia.
Argentina.	France.	Portugal.
Austria.	Great Britain.	Roumania.
Hungary.	Greece.	Russia.
Belgium.	Italy.	Siam.
Brazil.	Japan.	Sweden.
Bulgaria.	Mexico.	Turkey.
Chile.	Monaco.	Uruguay.
China.	Montenegro.	
Denmark.	Norway.	

The treaty concluded will later on be submitted to the Senate for its action.

ESTIMATES.

Estimates for the Signal Corps are four in number: Clerical force, appropriated for in the legislative bill; Signal Service of the Army, and Washington-Alaskan military cable and telegraph system, appropriated for in the army bill; and operation and maintenance

of fire-control installations at coast defenses, appropriated for in the fortification bill.

The estimate for the clerical force is not increased. The Signal Service of the Army is increased by the addition of estimates to cover post telephone systems at interior and coast artillery posts, and to provide for new lines of equipment that have been adopted.

The estimate for operation and maintenance of fire-control installation is necessarily increased on account of the completion of new installations.

The estimate for the Washington-Alaskan military cable and telegraph system is slightly increased to cover necessary improvements and extensions. An estimate has also been submitted to reimburse officers and enlisted men for the excessive expense they are under while in Alaska on duty in connection with the telegraph lines.

ENLISTED MEN.

The enlisted force, which aggregated 1,139 on June 30, 1907, has experienced the following changes: Enlisted and reenlisted, 337, of whom 204 were recruits; deserted, 32, being 2.8 per cent of the total force; died, 8, 0.7 per cent; discharged for disability, 9, 0.7 per cent; discharged by purchase, 64, 5.6 per cent.

Much difficulty has been encountered in retaining in the corps men of character and intelligence and in enlisting sufficient recruits to keep up to its authorized strength. The grade of master signal electrician, with its increased pay, has, however, operated to a certain extent to encourage men to enlist with the hope of ultimately reaching this grade. Appointments to this grade are made by competitive examination, and in a few cases men have been promoted through special and extraordinary ability along certain lines of work, their permanent appointment, however, being subject to successful future examination.

The grade of first-class sergeant is at the present time also filled by examination, the examination for both of these grades being open to men who have reached the grade of sergeant in the Signal Corps.

SIGNAL TROOPS FOR THE MOBILE ARMY.

Modern conditions have completely changed the military methods of operating armies and handling troops in the field. With the great range and efficiency of modern arms and the widely extended terrain now employed, it is essential to success that there shall be ample and reliable lines of information connecting the different armies and the different units of a single army in order to insure constant and accurate control of the forces involved.

At the battle of Mukden the third Japanese army laid 155 miles of field telegraph line during the battle, and at Liaoyang General Kuroki controlled the entire force by wire from his headquarters, 12 miles in rear.

It is now fully recognized by the leaders of military thought that the strength of an army is not alone measured by the number of men it contains, but by the number of rifles, guns, and sabers it can put into cooperatively effective action at any one time.

Although the late Russian-Japanese conflict furnished an example of the use of this "military weapon" in advance of anything pre-

viously attempted, yet it is believed that the development of the power of accurate control upon the field of battle through perfect lines of information makes it possible for the commander who first utilizes it to the limit for tactical purposes to gain as decisive victories in the future as any that have ever been gained in the past.

Electricity is the swift and accurate messenger which now conducts the commercial business of the world, and which is even more important in war, where the element of time is always a controlling factor.

If troops are to succeed in war, they must have field lines of information which are so reliable and certain in action as to inspire and insure the complete confidence of the mobile army which has to depend upon them. The equipment must also be so mobile as to provide instant communication by the side of the commander, wherever he may be required to go in the exercise of his duties.

TRAINED SIGNAL TROOPS ADD RIFLES TO THE FIRING LINE.

Recent field experiments with troops have conclusively proved that for every specially trained Signal Corps soldier provided, not only is the field information service many times increased in efficiency, but for every such soldier taken from the total strength of an army at least two men are returned to the firing line who would otherwise be removed therefrom to perform the inefficient and often impossible work of the mounted orderly of the past. Since this messenger service must be provided, either through mounted orderlies or trained signal troops, it is manifest that the provision of a minimum per cent of the total strength for this purpose results in increasing the number of men for the firing line, instead of taking from that line. In short, it is believed that all well-informed military authorities are now in accord in advocating the development of this branch of the service to the limit of its possible usefulness.

These troops must be trained with the troops of the line, for which they primarily exist, and the establishment of larger maneuver posts in the United States creates an immediate demand for such organized bodies of signal troops. That this demand has been already recognized is evidenced by the recent official requests for battalions of signal troops to be provided for at three of the larger maneuver posts. Plans and specifications have been forwarded for the necessary barracks, vehicle sheds, stables, etc., for these posts, in advance of any provision at present for a personnel to meet these demands.

PRESENT CONDITIONS.

The installation of the system for the fire control and direction of the coast artillery is now rapidly approaching completion. The equipment for the fire control for field artillery has been issued to the batteries. The type equipment for maintaining tactical control in combat has been provided. It remains to provide the necessary personnel to carry it into effect.

There is a shortage both in officers and men throughout the entire service—in Cuba, the Philippine Islands, Alaska, and the United States. Of the men now in the Philippine Islands 144 have been there more than two years. By the end of November the entire force will have been there that time, with very little prospect that

they will be relieved this year. There has also been urgent request from Cuba and from the posts in the United States, but the Department is unable to supply it.

This deficiency in the personnel has made it utterly impossible to even approximately provide for the necessary signal troops for service with the mobile forces. One small company has been set aside and equipped for this service and is stationed for use at the three service schools at Fort Leavenworth, Kans. Another company equipped for field service has been sent to Cuba.

The best information obtainable from officers of our own Army and the practice in foreign service indicates that 2½ per cent of the force is the minimum that can safely be used for signal work. The type of service here considered for tactical lines of information is a special mounted service with highly trained personnel, which can not be created after the declaration of war. Therefore these special troops should be provided and trained in time of peace, on the basis of our authorized army of 100,000 men, and not of the existing army of 65,000 men. In this respect signal troops are the same as field artillery.

From the best information obtainable from all sources, it is believed that the Signal Corps should consist of the following: One Chief Signal Officer with the rank of brigadier-general, 4 colonels, 4 lieutenant-colonels, 12 majors, 36 captains, 36 first lieutenants, 36 second lieutenants, 100 master signal electricians, 300 first-class sergeants, 300 sergeants, 300 corporals, 1,200 first-class privates, 300 privates, 60 cooks, 48 farriers and blacksmiths, 24 saddlers, 24 wagoners 48 trumpeters, and 1 band, as now authorized by law for bands of infantry regiments, and each grade should receive the rank, pay, and allowances as now provided by law.

That the Chief Signal Officer of the Army should be appointed as now provided by law, and vacancies should be filled, first, by the promotion of the regular officers of the Signal Corps according to seniority, and second, by details to the Signal Corps under the provisions of the act of February 2, 1901, from the Army at large from the grade in which the vacancy exists or the grade below, provided that officers so detailed in the grades below that of major should not be again eligible for such detail until they should have served for at least one year away from that corps.

That the Signal Corps, as herein recommended, should be organized as may be directed by the President of the United States, and the officers and enlisted men on duty with the companies and battalions assigned to duty with troops should constitute a part of the line of the Army.

In the words of a distinguished English military authority—

"There is no salvation for an army, however brave, however well trained to fight, which on the field of battle has to trust to the blind and semi-independent work of isolated units, if it is opposed by the combined force of an equally capable army acting as a whole under the well-informed guidance of its supreme leader."

Very respectfully,

JAMES ALLEN,
Brigadier-General, Chief Signal Officer of the Army.

The SECRETARY OF WAR.

REPORT OF THE CHIEF OF ARTILLERY.

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REPORT OF THE CHIEF OF ARTILLERY.

War Department,
Office of the Chief of Artillery,
Washington, July 29, 1907.

Sir: In accordance with the requirements of Army Regulations, which makes it the duty of the Chief of Artillery to advise the War Department of the efficiency of the personnel and material of the artillery, and to make such recommendations in reference thereto as shall tend to promote the efficiency of this arm of the service, I have the honor to submit the following report:

PERSONNEL.

Since the last annual report of the Chief of Artillery was submitted the artillery has been increased and reorganized, and its efficiency will be, it is believed, materially promoted in consequence thereof. The Coast and Field Artillery, which, under the act of February 2, 1901, were organized as a corps with a common chief, were completely separated by the act of January 25, 1907, except as to the Chief of Artillery, who will continue to exercise supervision over both arms until July 1, 1908, and thereafter over the Coast Artillery only. By the latter act, also, the Coast Artillery was organized into a corps, its commissioned and enlisted strength increased to the equivalent of 14 regiments of cavalry or infantry, and its maximum enlisted strength fixed at 19,321; the Field Artillery was increased from 30 batteries to 36 batteries, and its commissioned and enlisted strength increased to provide for the organization of 6 regiments of two battalions each, with three batteries to a battalion.

The strength and organization of coast artillery companies were made variable, in order that the companies may be made to conform to the requirements of the service, depending in the case of gun companies on the number and caliber of guns in the different coast batteries required to be manned by them, and in the case of torpedo companies on the number of mines to be planted and operated in different fortified harbors. The law fixed the minimum enlisted strength of a battery of Field Artillery at 133, but authorized the President at his discretion to increase any battery to a maximum of 190. The act also provided certain new grades for the artillery specialists among the enlisted personnel.

The separation of the Coast and Field Artillery as provided by the act of January 25, 1907, has been made. This separation will, it is believed, greatly develop the efficiency of both arms, as it will enable each to perform its particular rôle in its own sphere without the frequent interchange of officers which has heretofore been required, to the detriment of the best interests of both arms. The regimental organization provided for the Field Artillery will enable this arm to be properly trained for the performance of its appropriate functions in conjunction with the cavalry and infantry as one of the three fighting elements of the mobile army. The corps organization with the company of variable strength and organization, provided for the Coast Artillery, will enable the personnel required to man the different harbors to be precisely adjusted as to number and grades of company officers and men to the needs of the armament, and thus accomplish the defense of the coast line in the best interests of efficiency of the arm and of economy to the Government.

The number of field officers in the Coast Artillery as now authorized, was fixed on the basis of the number of field officers required for a given number of cavalry or infantry regiments, whereas, had the interests of the coast artillery service alone been strictly considered, it would have been better to have based it upon the number of battle, fire, and mine commands into which the coast armament and mines should be divided for purposes of most efficient fire control and fire action. However, it is considered that the number of coast artillery field officers as now authorized will answer sufficiently well the present practical needs of this arm, and that the question of the exact number of field officers needed for battle, fire, and mine commands need not be considered until at least one manning detail of Coast Artillery is provided for all guns mounted and all mine fields to be planted in our fortified harbors. The corps organization now authorized for coast artillery meets, it is thought, all the present tactical needs of this arm, including the needs of its efficient organization into fire, mine, and battle commands, and its proper tactical handling in war.

It is considered that the present method of designating the different fortified harbors of the country as "artillery districts," of assigning the senior coast artillery officer in each district as the "district commander," and of providing the district commander with a suitable staff, is admirably adapted to the administrative needs of the Coast Artillery in each district, and well calculated to promote the efficiency of this arm so far as relates to all coast artillery matters, tactical and administrative, under the control of the district commanders. With regard to the higher administration of coast artillery, however, an anomaly in military administration is still considered to exist, for while the coast and the field artillery have been completely separated, except as to a common chief, temporarily, and while the Coast Artillery has been organized by law into a separate corps, and thereby, in the eye of the law, practically separated from all troops of the mobile army, it is still linked to the cavalry, infantry, and field artillery through the fact that, under existing arrangements, territorial administrative departments are organized in which both field army troops and coast artillery troops are grouped together for administrative purposes under the command of the same general officer.

The general officers who command and who have commanded the coast-bordering territorial departments have been appointed, with very rare exceptions, from the cavalry and infantry, and have had no previous training in the handling or administration of coast artillery troops. As a consequence, in such cases they can have no adequate knowledge of either the tactical or administrative needs of this arm. Under such conditions the interests of the Coast Artillery, and, therefore, those of the United States, must suffer in all matters of coast artillery technique which bear on coast artillery material and its use. So long as this anomaly continues to exist, just so long, it is considered, the Coast Artillery will be lacking in that efficiency which rests on an adequate and proper installation of coast artillery material and the highest possible development of training of the personnel assigned to its service; it will be lacking, in short, in that standard of efficiency that would be possible were the administrative head of the territorial department educated and trained technically in his earlier years in all of the details of the means and methods of modern coast defense.

A clear distinction should be drawn between a territorial military department composed solely of infantry, cavalry, and field artillery and one composed solely of coast artillery troops, in that the former is an administrative unit applicable normally to peace conditions only, and is abandoned in war, whereas the latter is a coast defense administrative unit that would continue to exist in war the same as in peace. At the outbreak of war the infantry, cavalry, and field artillery are withdrawn from their peace stations and mobilized into the brigades, divisions, and corps of the field army for duty in connection with the land operations of the field army. On the other hand, the Coast Artillery at the outbreak of war with any maritime power will simply continue the functions practiced during peace without any change of locality. The coast defenders are permanently located along the coast and can not be taken from the coast fortifications until all danger of naval attack on coast cities and shipping has disappeared as a result of a decisive victory of our fleet over that of the enemy. All administrative functions pertaining to the territorial department must therefore continue in full force for coast artillery during war. It is, in fact, precisely at such a time that coast artillery equipment and personnel must be maintained at their highest efficiency since the coast line immediately becomes the threatened line of attack. This requires careful inspection by general officers who know how to examine in person minutely into the details of installation and drill and who are able to pass upon the condition of all coast-defense material in a practical way and upon the standard of the drill of the personnel. Only through such inspections by such trained general officers will it be possible to insure an efficient defense by the Coast Artillery. It goes without saying, indeed, that general officers who have spent their professional life with infantry, cavalry, or field artillery can not properly make such inspections as are here indicated, either during peace or war. They lack the knowledge and experience to know what conditions should obtain both as to means and methods.

The scheme now followed by the War Department regarding territorial departments contemplates discontinuing these departments at

the outbreak of war, or at least making such a modification of department lines and commanders as to upset or confuse coast artillery administrative functions at the very time when coast artillery troops are most likely to be engaged with the enemy.

If coast artillery departments were organized and placed under the command of general officers appointed from the Coast Artillery, there would be no change in administrative methods or in artillery department commanders at the outbreak of war, and coast-defense preparations could proceed with unity of direction and with the highest possible efficiency of administrative control. In the best interests of the United States I feel I can not too urgently recommend the creation of coast-defense departments and the assignment of general officers appointed from the Coast Artillery to the command thereof. This matter has already, both verbally and in writing, been brought to the attention of the War Department, and as it requires no legislation to put the recommendation into effect, it is hoped that War Department orders may be issued providing therefor.

The act of January 25, 1907, provided an increase of 5,043 enlisted men in the Coast Artillery. Of this increase 4,970 men were for the purpose of providing one complete manning detail for all mines, searchlights, and power plants to be operated in connection with the defense of all fortified harbors of the United States now completed or under construction. Deducting this 4,970 from the authorized maximum enlisted strength, 19,321, there remains 14,351 authorized by law for manning all guns now mounted in the fortifications of the entire country. These guns, however, actually require 36,863 men for one complete detail, so that the maximum number of men now authorized for gun defense is 4,080 short of one-half of one complete manning detail for the guns already mounted in the United States.

In addition, 330 men will be required for the operation of the mines, searchlights, and power plants and 5,546 men for the gun defenses of the United States projected by the National Coast Defense Board, making a total of 47,709 enlisted men required for the defenses of the United States alone as now completed and projected. For the defenses of the insular possessions and of the Panama Canal, as projected by the National Coast Defense Board, there will be required 1,270 men for the operation of mines, searchlights, and power plants and 6,131 men for the gun defenses, a total of 7,401 men. It is thus seen that 55,110 men are required for one complete manning detail for all our defenses as completed and projected.

When Congress began the present method of yearly appropriations for coast defenses, under which about $84,000,000 have already been appropriated for the United States and insular possessions, no doubt some thought was given to the question of the number of men that would be necessary to care for the costly fortifications, to enable proper training in the duties of coast artillerymen to be given in time of peace, and also to insure the efficient handling of all elements of the defenses in time of war.

It has heretofore been held that at least one complete manning detail for all guns mounted and mines to be planted should be provided in time of peace, and it has been thought by some authorities that in time of war two and possibly three reliefs would be found necessary for certain positions. Furthermore, it has been recom-

mended by former chiefs of artillery that the coast artillerymen authorized by law should be distributed among all coast artillery forts as proportionately as practicable, according to their armament.

This policy was followed by the War Department until last year, when, on my recommendation, the Secretary of War approved a scheme of concentrating the men in each artillery district in one or more main posts, giving as nearly as practicable one complete manning detail at these main posts, but leaving at all other posts in the district only small care-taker detachments of just sufficient size to properly care for their armament and equipment; the smaller posts, according to the scheme, are to be considered and designated sub-posts of the main posts, and all matters pertaining to administration are to be conducted from the main posts. The effect of such concentration will be to simplify all administrative duties in the districts and reduce the expenses connected therewith. The chief advantage, however, will be an increase of coast artillery efficiency, due to the fact that with the larger posts garrisoned with a full manning body, or nearly so, battle and fire command drill may be had, and field officers of artillery will be given an opportunity thereby to practice in peace the fire-action duties connected with the larger tactical units, which they would be required to perform in war. In addition, the more formal routine life of large posts always makes for a higher standard of discipline than obtains at the smaller posts.

It is self-evident that to insure the efficient handling of all elements of the defenses in any harbor in time of war, at least one manning detail for all the elements is necessary; and it is more than probable that in case of a long-continued attack on or seige of a harbor more than one relief for some if not all of the elements would be required. But while this is true in time of war, it is believed, after a careful consideration of all matters connected with the subject, that the completed defenses can be cared for properly in time of peace and the coast artillerymen authorized by law can at the same time be given proper training in the handling of all elements of coast defense, provided (1) that the scheme of concentration outlined above is carried out; (2) that the full number of all officers and enlisted men needed for the operation of mines, searchlights, and power plants as now authorized by law is kept up, and (3) that one-half of one complete manning detail of all officers and enlisted men required for the service of the guns proper shall be authorized by law as the peace footing for the fortifications of the United States.

As stated above, the maximum number of enlisted men now authorized for the gun defenses of the country is 14,351, and this is 4,080 short of one-half of one complete manning detail for the guns already mounted in the United States. The remaining half of one complete manning detail that would be required to place the coast defenses of all harbors of the United States on a proper war footing can be provided, it is believed, at comparatively small annual cost in time of peace if each of the coast States can be induced to organize a corps of militia coast artillery, having the same organization as the regular Coast Artillery. The State coast artillery corps could be assigned to the batteries which are in excess of those manned by the regular Coast Artillery. This belief has been confirmed by recent performances of certain portions of the organized militia of the coast States which, as

the result of an invitation extended to the governors of the States by the War Department, participated during the summer in joint coast defense exercises with the regular Coast Artillery. These exercises are referred to more fully hereinafter. From the excellent spirit, zeal, and desire to learn coast artillery gun work that has been exhibited by the militia in these maneuvers, and from what has been said by officers and men of the organizations who have so far taken part in them, it is believed that many of the coast States are disposed to consider favorably a proposition to organize such State coast artillery corps for the purpose stated. Moreover, it is thought that a class of men would enter these organizations who could not in war undertake military duty with the mobile field army owing to the prohibitive demands of business and family responsibilities.

If the authorities of the coast States can be induced to organize such coast artillery reserve corps, and the corps in each State is given an opportunity to take part annually in coast artillery maneuvers with the regular Coast Artillery and to receive instruction in coast artillery gun work, it is believed, from what has already been done, that these corps would in a very few years be all that need be desired for coast artillery reserve purposes—that is, they would constitute a reserve which could be quickly called out and formed at the defenses they are to man, and they would be sufficiently well trained to handle effectively certain battery, fire, and battle commands that could be assigned them. In case of sudden war such a body of coast artillery reserves would prove of incalculable value to the nation.

In direct connection with this question of providing the necessary number of trained coast artillerymen for the efficient handling of the elements of the coast defenses of our fortified harbors in time of war is the further question of providing certain bodies of coast defense infantry, which may be designated as "artillery supports," for the defense of the rear of the forts from attack by small parties of the enemy which may be landed from war ships for this purpose while the ships engage the forts in front.

Such "supports" were unnecessary in days of old when sea-coast forts were high-walled inclosures, with or without a surrounding moat and often with a counterscarp, redoubt, and glacis on the land front. Troops were provided within such forts for defense against attack from any and all sides. At the present day, however, the so-called coast-defense forts consist of a number of detached batteries—concrete and earthen embankments—often separated by considerable distances, behind which the heavy modern guns are usually so mounted as to be hidden from the front, but completely open and exposed to view from the rear. It is absolutely necessary that other men than those required to man the guns in a combat between coast forts and war ships on the sea side of the forts shall be provided to defend the batteries and their accessories—fire-control stations, searchlights, and power plants—from attack from the rear. It is thought that the defense of the land side of the coast forts should be intrusted to infantry, and it is believed that a certain portion of the infantry of the organized State militia should be set apart for this purpose.

During the coast artillery maneuvers this summer experiment was made along these lines. In the simulated attacks made against the land sides of the forts the defense was made by militia infantry, and

from the excellent work that these troops have so far done it is believed that if they can be induced to take up the work of defending the land approaches to the coast batteries and are given an opportunity to take part annually in such exercises as were conducted during the summer and to receive thereby yearly instruction in time of peace on the terrain they would occupy in war, they would form all that is needed for artillery supports, and would, like the State coast artillery reserves, prove invaluable to the nation in case of sudden war.

For the insular possessions, it is considered that one complete manning detail of regular Coast Artillery should be authorized by law as the peace footing for all the gun and mine defenses when completed. The impossibility of forming a militia or other reserve in these possessions renders the one complete manning detail of regular Coast Artillery, on both a peace and a war footing, a necessity. It would, for a like reason, be necessary to rely on detachments from the regular infantry stationed in the islands for coast artillery supports in these possessions.

The importance of the early consideration by the proper authorities of some method of obtaining the trained personnel necessary to provide at least one manning detail for our costly coast defenses, as well as the troops necessary to protect the forts from attack from the rear in time of war, and, also, of taking the necessary steps in time of peace for carrying out such methods of training and mobilization as may be decided upon, can hardly be overstated; for, unless this is done, the full value of the defenses can not be realized in war, and until it is done we are liable to meet with national disaster in case of sudden outbreak of war with and attack by an enterprising maritime enemy. The method here suggested for obtaining this personnel is considered to be entirely feasible, and it is believed that if it is carried out as suggested it would prove comparatively inexpensive in time of peace. It would at short notice, in the event of sudden war, call to the colors well-trained artillery reserves and supports to supplement the one-half of one manning detail of regular coast artillerymen authorized by law as a peace footing. The ultimate effect of this would be to render every fortified harbor on our coast safe from sudden naval attacks or raids of an enemy and to leave our Navy perfectly free to perform its proper function on the sea of seeking the enemy's fleet, unhampered and untrammeled by any thought of unprotected cities, navy-yards, or ports at home.

MATERIAL.

The total amount already expended or available July 1, 1907, for the completion of the coast defenses of the United States is as follows:

Gun and mortar batteries	$29,898,434.02
Guns and carriages	35,706,608.22
Submarine mines	5,799,202.27
Fire control	5,790,346.71
Searchlights for harbor defense	1,135,000.00
Total	77,824,591.22

The amounts estimated for completing the defenses of the United States, of the insular ports, and of the entrance to the Panama Canal, in accordance with the plans of the National Coast Defense Board, and for providing reserve ammunition therefor, are as follows:[a]

United States:		
Estimate of National Coast Defense Board		$50,879,339
Subsequently appropriated:		
Gun and mortar batteries (modernizing)	$250,000	
Gun and carriages	306,000	
Submarine defenses	900,000	
Fire control	2,253,022	
Searchlights, harbor defense	335,000	
		4,044,022
		46,835,317
Insular possessions:		
Estimate of National Coast Defense Board		19,873,895
Subsequently appropriated		1,635,440
		18,238,455
Isthmian Canal:		
Estimate of National Coast Defense Board		4,827,682

From the foregoing it will be seen that the coast defenses of the United States are considerably more than half completed. The expenditures for the portion of these defenses already completed have, however, been mainly for guns and their emplacements. Considering the present condition of these defenses, the four elements of defense most needed and which will, if provided, secure the greatest measure of public safety at the least cost, are:

I. The completion of the installation of the approved system of fire control for all guns and mortars mounted.

II. The provision of necessary searchlights for harbor defense at night.

III. The completion of the submarine-mine equipment of all fortified harbors.

IV. The provision of power plants for use in connection with both guns and mines.

I. Fire Control.

The total amount of funds appropriated for fire control in the United States up to date is $5,790,346.71, which has been utilized as follows:

(a) The standard fire-control installations of Portland, Boston, New York, Puget Sound, and San Francisco are completed, or will be completed, from funds available. The installations at this time are in various stages, those of Forts Hamilton and Wadsworth being finished and that of San Francisco not yet progressed beyond the purchase of material. No further funds will be required for these harbors until such time as the additional defenses recommended by the National Coast Defense Board are provided, at which time the additional fire-control installation connected with these works will have to be taken up. The cost estimated by the National Coast

[a] Figures given include appropriation of March 2, 1907.

Defense Board for this additional fire-control work is as follows: New York, $96,200; Boston, $268,200; Portland, $45,000; Puget Sound, $360,659, and San Francisco, $84,000.

(b) Provisional fire-control installations have been installed, or are in process of installation, for all batteries and fire commands to which troops are assigned in artillery districts other than those mentioned as having the standard system for all batteries. These installations are not uniform in type, part being of the latest improved plans and part being according to plans now obsolete. They provide, however, a means by which all coast artillery troops can be instructed in accordance with latest developments in methods and appliances, and, while not as highly efficient for the purpose of defense as the standard installations, they in all cases would be capable of giving a comparatively efficient range and position-finding service. The provisional fire-control material will, so far as is practicable, be utilized later in the installation of the standard system when the latter is provided. Some of the provisional installations will be of little value, while others, by an addition of only 20 per cent, will be fully converted to the standard equipment.

On account of the recent increase of the coast artillery by forty-four companies, it will be necessary to extend this provisional installation. Funds are available for completing this work, a sufficient amount having been reserved from the last appropriation; and the extension of the provisional installation, so far as practicable, will be along the lines of the standard installation, so as later to merge into it.

(c) With the exception of Type "A" instruments and observation telescopes, there is very nearly enough ordnance equipment on hand or under manufacture to provide for the proposed fire-control installations of all the defenses so far provided in the United States. This is shown as follows:

Ordnance fire-control equipment.

Instruments.	Required.			On hand or under manufacture.	
	For defenses already provided in United States.	For defenses recommended by National Coast Defense Board for United States.	For insular possessions.	For United States.	For insular possessions.
Observation telescope	132	33	35	.....	.....
Plotting board, Fire Commander	40	7	6	14	.....
Range finders, Type "A"	555	123	105	317	.....
Plotting board, gun	163	33	22	204	16
Range board	126	30	21	152	8
Deflection board, gun	126	30	21	131	8
Wind component indicator	126	30	21	126	8
Plotting board, mortar	88	14	14	70	.....
Deflection board, mortar	47	11	13	48	.....
Set forward ruler, mortar	47	11	13	47	8
Prediction scale	47	11	13	50	8

The Ordnance Department now has on hand sufficient funds to purchase about one hundred and fifty (150) Type "A" instruments. This department will, therefore, soon have on hand more equipment than can be installed as part of the standard installation for some years to come.

From the $900,000 appropriated for the current fiscal year, allotments were made by the Secretary of War as follows:

Engineer Department:	
For completing work at San Francisco	$432,784.81
Signal Corps:	
For maintenance and fixed expenses	120,000.00
For completing work at Fort Hancock, N. J., Boston, and Portland, including post telephone work	40,000.00
For completing work at San Francisco	237,352.00
For completing fire-control installations of mine stations in districts having provisional installations, and for extending provisional installations due to increase in Coast Artillery	69,863.19

For the insular possessions sixteen thousand (16,000) dollars was appropriated in 1905, and $32,000 in 1906, for the purchase of ordnance fire-control equipment. Purchases have been made of equipment as indicated in the table above, and there are enough funds on hand to purchase all of the ordnance fire-control equipment required for the insular possessions except Type "A" range finders. During the last session of Congress $100,000 was appropriated for fire control in insular possessions. It is believed that all of this will be necessary for completing the engineer work in Subig Bay. The National Coast Defense Board's estimate for fire-control installation at Subig Bay was $243,391, of which $181,600 was for the Engineer Department and $42,200 for the Signal Corps, and the remainder for the Ordnance Department.

It is urgently recommended that liberal appropriations be made for fire control during the next few years, in order that this very important element of the defenses may be completed. So far only 5 of the 27 fortified harbors on the coast of the United States have had funds allotted for completing the standard fire-control installation. A single appropriation as large as the annual appropriations for gun defenses between 1897 and 1899 would be sufficient to complete all of the fire-control installations of the United States.

It is thought that the very least which should be provided during the next fiscal year for the United States is the completion of Hampton Roads (estimated by National Coast Defense Board at $306,114); eastern entrance to Long Island Sound (estimated by National Coast Defense Board at $762,775); and Narragansett Bay (estimated by National Coast Defense Board at $616,861), amounting to a total of $1,685,750.

It is recommended that fire-control funds be appropriated for those harbors of the insular possessions where gun defenses have been provided, so that when the gun defenses are completed the fire-control installations will also be completed, and the defenses thus rendered immediately serviceable.

The estimated cost is as follows:

Subig Bay	$243,391
Manila	561,086
Honolulu and Pearl Harbor	320,656
Guantanamo	280,606
Total	1,405,739
Funds already appropriated	148,000
Balance required	1,257,739

If the batteries are completed, guns mounted, and no fire-control installation provided, the defenses will be of little value. Mortars would be of no value whatever without some fire-control installation, improvised or otherwise. At night, when an attack may most likely be expected, batteries without searchlights would be practically useless. Searchlights, however, would be of no value without a fire-control installation. These are undisputed and fundamental principles of modern coast defense. In view of them, the relative cost of the battery and the fire-control installation which gives it life should be considered comparatively. The cost of a battery fire-control installation is about 5 per cent of the cost of the battery. The average cost of the fire-control installation per harbor is less than the cost of a single 12-inch battery of two guns.

The development of the Coast Artillery and the value of the present system of fire direction may be seen from a comparison of the results of target practice of 1900 and 1906. In 1900 the best result obtained at target practice with the larger caliber guns was by a battery which scored 50 per cent of hits at a range of 4,500 yards, firing at the rate of one shot per gun every three minutes. During 1906, 100 per cent of hits were obtained by a number of batteries at ranges of from 6,000 to 7,000 yards, firing at the rate of one shot per gun every forty-five seconds. From this it will be seen that, due to improvements in our system of fire direction and to efficient training of our coast artillery personnel, eight times as many hits from a heavy gun in a given time were obtained in 1906 as in 1900—and at a range in 1906 at which the chance of hitting is one-half as great as that at the range used in 1900—in other words, about sixteen times as many hits were made in 1906 from the same gun, in a given time, at the same range, as were made in 1900. Thus the expenditure of a comparatively small amount on our fire-control installation and by thorough training of our artillerymen, the value of our gun defenses, as estimated by their hitting capacity, was increased sixteenfold in six years. The result of target practice for the year 1907 show that this battery's hitting capacity has been still further largely increased.

II. Searchlights.

The searchlight as an auxiliary to gun and submarine mine defense has been rapidly developed within the last few years, and recent combined army and navy maneuvers have shown clearly that they are absolutely necessary for disclosing the presence of an enemy's ships at night. With them the ships may be so illuminated as to render the position-finding system almost as efficient at night as during the day; without them, a "run by" at night can be prevented only by means of mines or obstructions, which, in turn, can be removed with comparative ease if their location be not illuminated by searchlights.

The following is quoted from report of Board of Review of Army and Navy Exercises in June, 1905:

> The searchlights ashore were inadequate in number and many were deficient in power. There were no lights in reserve to replace those injured or destroyed, and those in use were unequal to the task of at all times lighting the channel of approach in a manner to guarantee detection at long or even medium ranges. But few targets could be illuminated at a time for want of sufficient lights. As operations against coast defenses are likely to be undertaken mainly under cover of darkness, the question of searchlights is one of primary importance. The

best efforts of the artillery should be directed to the solution of the problem of the proper number, size, location, distribution, and employment of searchlights. It is, like many coast artillery questions, a local problem, and it should be worked out for each artillery district.

The estimated cost of searchlights necessary for gun defense of all fortified harbors of the United States, as given by the National Coast Defense Board, is $2,376,000, and for mine defense $669,000, giving a total of $3,045,000 as the estimated cost of providing all the searchlights necessary for the defense of the United States.

By the act approved June 25, 1906, there were appropriated for the purchase of searchlights for harbors of the United States $125,000, and by the act of March 2, 1907, $210,000, leaving a balance of $2,710,000 yet to be appropriated. At the average rate of appropriations for 1906 and 1907 it would take 16 years to complete this important accessory of the defenses.

The following table shows the number of searchlights now on hand, to be furnished from available appropriations, and the number yet to be provided:

Size.	On hand.	Under contract to be furnished.	Total lights recommended by National Coast Defense Board to complete equipment.	Can be purchased from appropriations since report of National Coast Defense Board.	Yet to be provided.
Inches.					
24	20	.....	.....	.....	.....
30	29	.....	.....	.....	.....
36	24	[a] 30	126	.....	72
60	14	.....	155	19	122

[a] These 30 lights are portable sets, and it is the intention to first make use of them in determining the proper locations in the various harbors for the lights yet to be installed before assignment of them to permanent stations.

The estimated cost of searchlights for the gun defense of harbors to be fortified in the insular possessions, as given by the National Coast Defense Board, is $589,000, and for mine defense $174,000, giving a total of $763,000. By the act of March 2, 1907, $30,000 was appropriated for this purpose, which leaves a balance of $733,000. The National Coast Defense Board also estimated $228,000 as necessary for the gun searchlights at Isthmian Canal ports. This brings the total cost of providing searchlights for insular and isthmian ports to $961,000.

The following table shows the number of searchlights to be furnished from available appropriations and yet to be provided for insular and isthmian ports:

Size.	On hand.	Can be purchased from available appropriations.	Recommended by National Coast Defense Board.	Yet to be provided.
Inches.				
36	0	1	13	12
60	0	1	46	45

The total number of searchlights yet to be provided for home, *insular, and* isthmian ports is 84 36-inch and 167 60-inch lights.

In view of the absolute necessity for searchlights for efficient coast defense and of the comparatively few lights on hand and that can be purchased with available appropriations the necessity for an increase in the appropriations for the purchase of these lights is apparent.

III. Submarine Mines.

Recent war has shown clearly the value of submarine mines as an element of harbor defense. If a harbor is defended by an efficient system of mines and the requisite guns for their protection against countermining, sweeping, or other methods of removing them, it is not believed that any enemy, however enterprising, will ever attempt to force an entrance into a harbor with large ships. This conclusion has been supported strongly by the terrible destruction wrought by submarine mines at Port Arthur, Dalny, and Vladivostok during the Russo-Japanese war. Our system of submarine mines is practically perfect as a war weapon. Being under complete electrical control from the shore, a line of mines may be rendered instantly destructive to an enemy or harmless to passing friendly vessels.

Having so many guns and mortars already mounted in the United States, it is believed that the greatest amount of harbor defense at the least cost can be procured by the completion of the mine defense of all fortified harbors of the United States.

The estimated cost of completing the submarine-mine defense projects recommended by the National Coast Defense Board for home ports is $2,147,932 and for insular ports $988,046. Searchlights, fire-control apparatus supplied by the Signal Corps, and boats for mine work have been omitted from the estimates, these items having been considered with similar ones needed for the gun defense in order to simplify as well as to more economically control the expenditure of the appropriations.

While all progress toward the completion of both submarine-mine structures and equipment has been made to the limit of the available appropriations, it can not be too strongly pointed out that the completion of this defense of our harbors should be pushed to a condition of absolute preparedness. It will be noted that the above mentioned estimates show that at less than one-third the cost of a fully equipped battle ship the mine defense of the United States can be completed from Portland, Me., to Puget Sound. When the value that this completed mine defense would have, not only for its actual worth as a destructive element of a harbor defense, but also for its moral effect in closing our harbors against sudden attack even by the most enterprising enemy, and the comparatively small cost at which this protection can be obtained, is considered, it will be apparent that this completion should be accomplished at the earliest possible moment.

Moreover, it should be clearly understood and fully appreciated by those in authority that we can not afford to wait for war before completing our mine defense, but must be prepared beforehand, for unless we are thus prepared no amount of money made available at the outbreak of war could procure mine material in time to be of service in mine defense against an active maritime enemy. Essential parts of this material, such as cables, mine cases, and electrical apparatus, can not be bought at a moment's notice in open market, but

must be manufactured to order, and after having been ordered it requires months to fill the orders.

If confronted suddenly by war, only such mine material as is on hand can be utilized for immediate mine defense, and if any essential part of the mine system is lacking the whole mine defense must fail. If the enemy is aggressive, an attack on a harbor may even precede a formal declaration of war, as was the case in the attack on Port Arthur in February, 1904. To meet such an emergency the complete mine equipment of every harbor to be mined should be kept on hand ready to be planted, and it should be made possible to mine effectively every harbor within forty-eight hours.

IV. Power Plants.

Under the heading of "Power plants and electrical installations" the National Coast Defense Board states:

The use of electricity in connection with seacoast defense has become necessary for—

1. Current for motors to operate ammunition hoists in order that the service of ammunition may be equal to the increased rapidity of the fire of guns.
2. Current for the system of range finding, fire-control, and fire direction.
3. Current for searchlights.
4. Current for lighting various parts of the emplacements and range-finding stations.
5. Current for motors for retracting guns on disappearing carriages.

In a tabulated estimate of the coast artillery material needed for the completion of the harbor defense of "home ports" the Board's estimate for the cost of "central power plants" for these home ports is $3,062,664; and for the cost of reserve plants is $2,153,367. So far no direct appropriation has been made for power plants, such as have been so far constructed having been built from the general appropriations for gun and mortar batteries. No appropriations for new batteries in the United States having been made within the last two years, no power plants, as a consequence, have been built during that time. Such plants having become a necessity for the efficient service of batteries, lights, and communications, a liberal appropriation should be made for their construction each year until the amount as estimated for by the National Coast Defense Board shall have been appropriated.

INSTRUCTION.

TORPEDO PLANTERS.

During the past year one of the torpedo planters has remained on duty at the School of Submarine Defense, at Fort Totten, N. Y., and the other three have continued the scheme of instruction followed in preceding years, of visiting the harbors along the Atlantic and Gulf coasts, and giving from one month to six weeks' instruction at each of the ports visited by them.

In addition to their instruction work, these boats are always available for permanent assignment to districts in case of actual hostilities. It could never be expected that sufficient torpedo planters would be provided for the various harbors requiring submarine mine defense, and for speedy work in mine planting it is necessary that

other boats be made available for this purpose whenever the emergency might arise. The joint board recently adopted a resolution that when, upon the outbreak of war or the threatening of hostilities, the vessels of the Light-House Establishment have been turned over to the Navy Department the Secretary of the Navy should place at the disposal of the War Department such light-house tenders as the Secretary of War may request for temporary duty in laying out the harbor defense mine fields, the said employment to terminate with the initial planting of the mines and not to continue for the purpose of the maintenance of the fields.

This will greatly promote the efficiency of the submarine mine defense, for rapidity of planting is a most valuable asset. With the four planters already assigned to the Atlantic and Gulf coasts and two more on the Pacific, it is believed there will thus be provided sufficient boats to carry on the instruction in practical mining, which has done so much to improve the condition of mine defense at the posts on the Atlantic and Gulf coasts.

At the last session of Congress there was appropriated $175,000 for the construction of one torpedo planter for the Pacific coast, and plans for the vessel are now being prepared.

The Quartermaster-General has been requested to include in his estimates this year $175,000 for the construction of an additional torpedo planter for the Pacific coast and $525,000 for three torpedo planters for the insular possessions—one for Subig Bay, one for Manila Bay, and one for the Hawaiian Islands. The submarine mine defense which is to be installed at the insular ports should not be dependent upon the possibility of proper boats being in their harbors at the time of need. It is necessary that these important places be entirely prepared for rapid and efficient mine planting.

BOATS FOR COAST ARTILLERY SERVICE.

Attention has been called to the need of boats for artillery work exclusively in the annual reports of the Chief of Artillery for the years 1904, 1905, and 1906. As was pointed out last year, these boats are intended—

First. To render artillery practice possible with targets that are towed at such a rate as may be expected in action.

Second. To render possible daily vessel tracking drill, especially at night with use of searchlight, and frequent subcaliber practice under the same conditions as stated above.

Third. To provide means for drill in planting mines and for other instruction in handling and using submarine defense material at posts where this material is on hand and where a regular torpedo planter is not available.

Fourth. To transfer artillery material and personnel between posts within an artillery district for repair work, inspections, and drill.

A memorandum was prepared based upon a study of the needs of the artillery posts in boat transportation of all kinds and a recommendation was included for the supply of artillery district boats and steam launches at an estimated cost of $822,250. An allotment of $725,000 from the appropriation "Transportation of the Army" was made to cover these boats.

Five artillery district boats have recently been completed. Three of these are now being used to assist in the joint army and militia coast defense exercises, and all of them will shortly be assigned to districts for permanent duty. Progress is now being made in the design of the additional artillery district boats and launches and their early completion is anticipated.

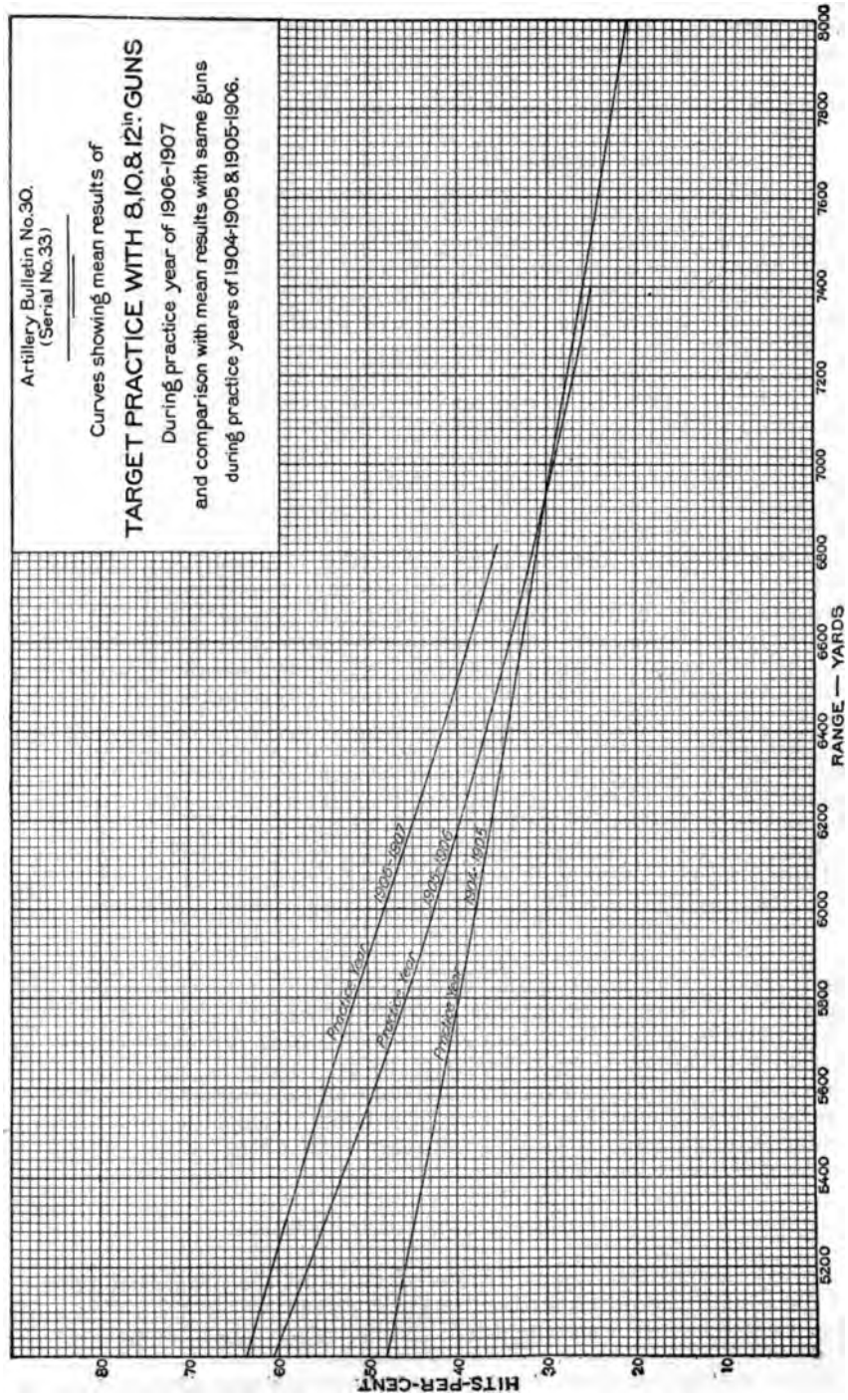
When it is considered how the artillery work has heretofore been handicapped by a lack of boats which were necessary for the proper drills and exercises, the advantage of having these boats for artillery purposes exclusively will at once be seen. Coast Artillery posts are very largely dependent upon boats for transportation of passengers and freight. This service is being maintained and improved from year to year by the Quartermaster's Department. In reply to a recent request for new passenger and freight steamers for the artillery districts of the Potomac, Charleston, New Orleans, and Puget Sound, the Quartermaster-General informed the Chief of Artillery that he had included in this year's estimates the sum of $228,000 for the construction of four 110-foot quartermaster steamers.

TARGET PRACTICE OF COAST ARTILLERY.

The results of service target practice during the past year with large caliber gun and mortar batteries have been very good. The improvement in the practice with large-caliber guns during the past year over that of the two preceding years is shown by the plate on page 19. This improvement is largely attributable to the fact that trial shots were allowed preceding each series during the past year, while during the preceding year they were allowed for the first practice only. The necessity for an allowance of trial shots which was set forth in my last annual report is well shown by the plate on page 21. As a result of the small percentage obtained during the second series of 1905–6, for which practice there was no allowance of trial shots, the mean curve for that year falls below the curve for the year 1904–5 at ranges beyond 6,900 yards.

While trial shots are necessary to establish the muzzle velocity of a lot of powder at the date of a practice, it has been found that the muzzle velocities of the subsequent record shots will vary more or less among themselves and will differ from the muzzle velocities obtained with the trial shots. While it is not expected that these variations can be eliminated wholly, it is thought that their extent increases with the length of storage of the powder and that they can be minimized by the careful blending and remaking of the charges before firing.

In accordance with this belief battery commanders have been authorized this year to blend all powder issued to them for practice and remake the charges, such blending and remaking of charges to be done as short a time as practicable before the practice takes place. Of the practices reported to date, advantage was taken of this authority in but one case, and in this practice remarkable results were obtained. The practice was at a moving target at an average range of 5,978 yards, the center of impact of the series—6 shots—was 27.2 yards beyond the target and the maximum range error—that is, the maximum variation in range from the center of impact—was 8.3 yards. As the vertical dispersion of this series was but 1 yard and the lateral dispersion 4 yards, all six shots of the series struck within


Artillery Bulletin No.30.
(Serial No.33)
Curves showing mean results of
TARGET PRACTICE WITH 8,10,& 12in GUNS
During practice year of 1906-1907
and comparison with mean results with same guns
during practice years of 1904-1905 & 1905-1906.
Practice Year 1906-1907
Practice Year 1905-1906
Practice Year 1904-1905
HITS-PER-CENT
80
70
60
50
40
30
20
10
5200
5400
5600
5800
6000
6200
6400
6600
6800
7000
7200
7400
7600
7800
8000
RANGE — YARDS

a rectangle 1 yard by 4 yards, and therefore might have struck the same plate on a battle ship. While it is thought that these results are such that they are likely to be rarely duplicated, it is believed that they may be considered indicative of the beneficial results to be obtained from the adoption of the practice of blending powder.[a]

The results of practice with guns below 6 inches in caliber have not as a rule, been satisfactory. It is believed that this can be correctly attributed to two causes; first, that the carriages of these guns are not equipped for the use of quadrant elevations, and, second, that in many cases the handling of these guns has been faulty, in that corrections based on observation of fire have either not been made or have been made separately for each gun by the gun pointer. It is believed that guns of all calibers should be laid by quadrant elevations and the use of tangent sight elevations discarded. I have recommended, therefore, that all carriages not equipped for using quadrant elevations be so equipped, and the Ordnance Department is now engaged in the work of carrying out this recommendation.

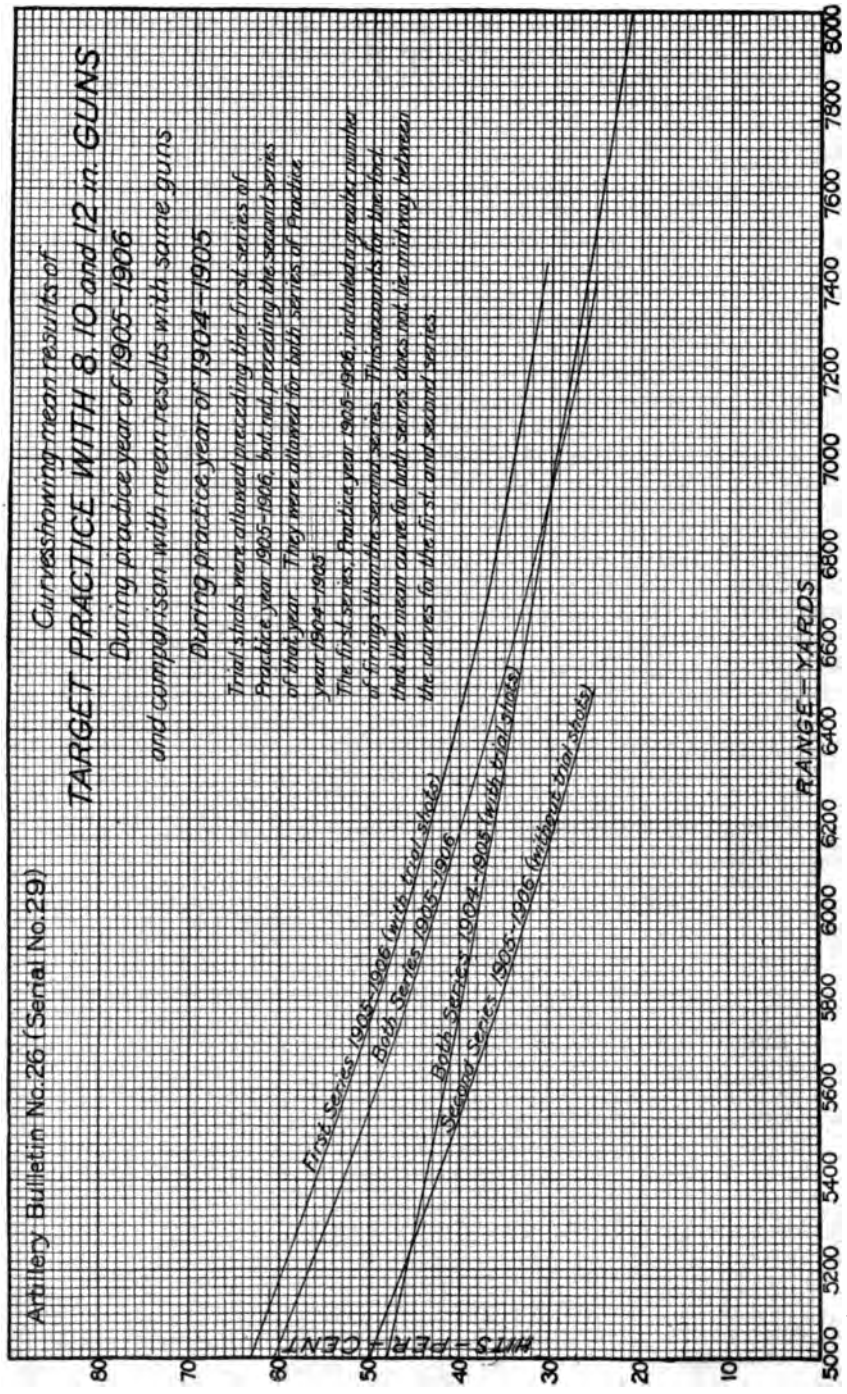
Actual battle conditions will be more closely simulated in target practice this year than before, in that the second service practice of the year will be fire-command practice, which has heretofore been held with subcaliber charges only. This practice is particularly valuable to field officers of Coast Artillery in affording them an opportunity to exercise fire control under the conditions that would obtain in action. There is, however, one phase of naval attack against which the Coast Artillery has been unable to simulate a defense by actual firing—that is, a night attack. While night practice is not of so much importance with large-caliber guns and mortars, which are provided with an accurate system of fire direction, it is considered as absolutely necessary for the attainment of a proper standard of efficiency with small-caliber guns, to which the adopted system of fire direction is not applicable, and which must depend, therefore, on a system based on the accurate observation and correction of fire.

For the successful application of such a system actual firing under all the conditions that will be met in action is a necessity. As these guns are provided for the defense of the mine fields and for the prevention of torpedo-boat destroyers or other small swift vessels slipping into the harbor (both of which forms of attack are far more likely to occur at night than during the day), it is evident that the practice with these guns can not be confined with safety to day firing. This practice could it is thought be conducted without danger to shipping by announcing beforehand to all concerned the dates and hours of the practice, and as but one hour on each of several occasions during the year would be required, it is believed that the slight inconvenience to shipping would be far more than offset by the increased value of the coast defenses.

THE MILITIA AND COAST DEFENSE.

In my last annual report I pointed out that the organized militia of the country could be utilized to great advantage in the defense of the coast line. It was suggested in that report that if one half of

[a] Since writing the above one record of practice has been received which is even better than that cited and one other nearly as good.


Artillery Bulletin No. 26 (Serial No. 29)
Curves showing mean results of
TARGET PRACTICE WITH 8, 10 and 12 in. GUNS
During practice year of 1905-1906
and comparison with mean results with same guns
During practice year of 1904-1905
Trial shots were allowed preceding the first series of Practice year 1905-1906, but not preceding the second series of that year. They were allowed for both series of Practice year 1904-1905
The first series, Practice year 1905-1906, included a greater number of firings than the second series. This accounts for the fact that the mean curve for both series does not lie midway between the curves for the first and second series.
First Series 1905-1906 (with trial shots)
Both Series 1905-1906
Both Series 1904-1905 (with trial shots)
Second Series 1905-1906 (without trial shots)
HITS-PER-CENT
80
70
60
50
40
30
20
10
RANGE-YARDS
5000
5200
5400
5600
5800
6000
6200
6400
6600
6800
7000
7200
7400
7600
7800
8000

the total personnel required to provide one manning body—one shift—for the guns and mortars now mounted or to be mounted in the United States proper was made up of regular Coast Artillery, the remaining half might well be supplied from the organized militia of the seacoast States. It was indicated, also, that the small bodies of infantry troops, called "artillery supports," required to protect the land approaches of the batteries against a sudden attack of small landing parties from ships in action against the batteries might well be supplied from the organized militia of these States.

It was further urged that the War Department take up this question with the authorities of the several States with a view to engaging their interest in the matter and to developing, if possible, practical cooperation between the regular Coast Artillery and the militia of the coast States in all matters affecting coast defense.

Pursuant to instructions from the Assistant Secretary of War, the Chief of Artillery, in February, 1907, submitted a memorandum on this subject which presented a tentative definite scheme for the cooperation of the regular Coast Artillery and the organized militia in coast-defense work. This memorandum was approved by the Secretary of War and published for the information and guidance of all concerned in Circular No. 17, War Department, 1907.

A salient feature of this scheme is to encourage the organized militia of the seacoast States to participate annually in joint practical coast-defense exercises with the regular Coast Artillery. It was thought that if a certain portion of the organized militia could be set apart as coast artillery in each seaboard State, and if this portion could be brought into close affiliation with the regular Coast Artillery in drill, instruction, and in practical coast-defense exercises, such militia could be easily and expeditiously brought to a fair degree of efficiency in serving the big coast guns and mortars, the range and position-finding accessories, the power and light installations, the electrical communication system, and in planting and serving the submarine mines.

A second important feature of this scheme provides that "artillery supports" be provided from the militia infantry of the coast States for the defense of the land approaches of each fort. It was suggested that certain infantry troops be set apart in each coast State for the land defense of those forts which are located on the shore line of the State, and that such field guns and machine guns as might be necessary in each case to supplement the infantry defense should be kept on hand in store at the forts, respectively.

The scheme further contemplated that the militia troops assigned as coast artillery would, after proper instruction, be assigned permanently to the service of some battery of guns or mortars or to other artillery material, and that thereby they would become in time of peace intimately familiar with the service of the material and the special hydrographic features of the water approaches in front of the batteries.

It also contemplated that the militia assigned to defend the land approaches to the batteries from the rear should be permanently assigned to the particular locality, would determine the best lines of defense to lay down, arrange the details in regard to constructing intrenchments and redoubts on the outbreak of war, and *work out* the personnel required and the field and machine guns neces-

sary. Circular No. 17 shows, in the table attached thereto, some of these details. They have been entered in a purely tentative way merely as an illustration as to how the details should be worked out. It should be understood in considering this table that the special study of each locality will develop modifications of the numbers of infantry indicated in the table as required for artillery supports and the number of field guns and machine guns to be used in connection therewith. Furthermore, as the interests being defended change, the details of the defensive scheme will change also.

A copy of Circular No. 17 was sent by the War Department to the governor of each coast State, and the cooperation of the State authorities invited in carrying out the scheme proposed in the circular. The replies received indicate much interest on the part of the State authorities in coast-defense measures, and many expressed the opinion that the scheme was feasible and stated that they desired to cooperate.

The Chief of Artillery was instructed subsequently to arrange a series of joint army and militia coast-defense exercises for the summer of 1907, in accordance with the scheme presented in Circular No. 17, and invitations were extended to all of the coast States to designate troops to participate therein, in accordance with the authority contained in Section IX of the act of Congress approved January 21, 1903 (G. O. No. 7, A. G. O., 1903). Each coast State was asked to assign a certain number of companies to act as "artillery reserves" and a certain other number of companies to act as "artillery supports." The plan for the exercises provided that each regular coast artillery company should be linked for drill and instruction purposes with a militia company acting as coast artillery, and that the officers and men of these two linked companies should affiliate as closely as possible in all matters pertaining to their duties; it was contemplated that each officer and each man of the regular companies would act as the coach and tutor of the corresponding officer and man of the linked militia company. It was the theory that by this policy instruction would be most expeditiously given and good fellowship would develop between the regulars and militia.

The plan for the exercises further provided that regular officers of the cavalry and infantry should be detailed to instruct the artillery supports, in a general way, in the duties of outposts, patrols, and particularly in their duties in repelling an attack on the coast batteries from the rear.

All of the coast States, except Delaware, Virginia, and North Carolina, responded favorably to the invitation of the War Department. These States gave as the reason for not participating that arrangements had been made for their troops to go to the Jamestown Exposition, and that the trips would operate to make it impracticable to accept the invitation. Texas wished to participate, but owing to the fact that the defenses of Galveston have not yet been rehabilitated since the storm of 1900, no coast-defense exercises could be held at Galveston, and it was too far to transport the Texas troops to the nearest places at which exercises were to be held, at San Diego, Cal., on the west, and at Pensacola, Fla., on the east.

Owing to the destruction wrought along the Gulf coast by the storms of last fall, it was impracticable to hold any exercises at New Orleans or Mobile. The authorities of Alabama requested that the

troops of that State might participate in the exercises in near-by States, and accordingly the Alabama troops which would have been assigned to the defenses of Mobile were assigned to the artillery district of Charleston for instruction and will take part in the exercises at that place.

The general features of the exercises were prescribed by the War Department. Considerable correspondence has been entailed in connection therewith, in regulating the details of the scope and nature of instruction to be imparted, providing and shifting personnel, providing boats to represent the naval feature of the exercises, fixing the location of camps, and providing suitable equipment therefor and supplies of all kinds for the regulars and militia. Department commanders were charged with all matters pertaining to the transportation, pay, and supplies; artillery district commanders with all matters pertaining to instruction, location of camps, and conduct of the exercises in their artillery districts; post commanders with all matters pertaining to sanitation, fitting up camps, providing for the comforts and conveniences of officers and men, issuing supplies, and discipline. The general authority under which all acted was promulgated in General Orders, No. 99, War Department, 1907.

The only exercises held prior to July 1 were those of the New York troops in the southern artillery district of New York (Forts Hamilton and Wadsworth) and in the eastern artillery district of New York (Forts Totten and Schuyler). While the official reports have not yet been received, I am able to report, as a result of a personal visit to these artillery districts during the period of the exercises and from personal correspondence, and reports in the daily press, that the exercises were successful beyond the most favorable expectations I had formed. Both regular and militia officers and men report that the exercises were in a very high degree interesting and instructive. The officers and men of the troops participating, or some of them at least, have informally expressed the hope that they might be assigned permanently to work of this nature. This is precisely the result that it was desired to produce, and the final, mature opinion of the militia officers and men of New York and the action taken by the authorities of this State are awaited with interest. The exercises in the other States take place during the months of July, August, and October, the last being in the Florida districts, October 15 to November 1. Since all of the exercises will be conducted according to the same War Department instructions, there is no reason to think any will be less successful than the New York exercises, and it is believed there is good ground to hope that from the initiative and impetus of these joint army and militia coast defense exercises there may, in course of time, develop an adequate and efficient coast artillery reserve among the militia, to reenforce the regular coast artillery in time of war, and an equally adequate and efficient body of coast artillery supports, to defend the coast batteries against land attack from the rear.

In closing this reference to the joint army and militia coast defense exercises, I wish to testify to the splendid manner in which the supply departments have met all of the needs of the troops, both regular and militia. It would have been impossible to carry out the exercises to any such successful conclusion had it not been for the hearty and generous cooperation of the supply departments. I wish also to testify to the highly efficient manner in which the officers of cavalry

and infantry assigned to instruct the infantry acting as artillery supports performed their duties. These officers gave evidence of the excellent work being done by the cavalry, infantry, and staff service schools. The character of the instruction imparted to the militia officers and men has been commented on most favorably by all who have knowledge of it.

Looking to the future, it is recommended that the authorities of each of the coast States be urged to organize a coast artillery corps in their State, as suggested hereinbefore. The Dick bill contemplates that the militia shall be organized as prescribed by law for the Regular Army. This requires that any body of troops created in the States for assignment to coast artillery duties should be organized as a corps of independent companies, like the coast artillery of the Regular Army.

As I pointed out in my last report, the regimental organization is a misfit when applied to coast artillery work. It should be understood, however, that coast artillery troops organized as a corps of independent companies may, incidentally, be formed and drilled as infantry, just as the regular coast artillery is, on special occasions, from time to time, so formed and drilled for street parades, ceremonies, riot duty, etc. A State corps of coast artillery could, at any time, parade and serve as infantry and at the same time would be most advantageously organized as a corps for its primary duty of manning and serving the large guns and mortars and the submarine mines in the defense of the coast line of the State.

It is recommended, also, in accordance with my remarks above under the heading "Personnel," that certain infantry be designated in each coast State as coast artillery supports. If this recommendation be carried out, it is recommended, further, that these troops have a distinctive uniform and insignia that will at a glance show the nature of their service; that whenever any body of infantry is so designated by the governor of a State it be assigned by the War Department to a definite line of land defense in rear of some specified batteries, and that thereafter the War Department encourage in every way possible the officers of such organizations to study the features of the line defense assigned to them, with a view to preparing in peace every detail that is susceptible of predetermination and of making themselves and their men thoroughly familiar with the topography of the line and of the country adjacent thereto.

It is further recommended that an annual appropriation be made to provide for calling yearly the militia coast artillery reserves and the militia coast artillery supports to the colors in such joint army and militia coast defense exercises as have been conducted this year. It is estimated that an appropriation of $300,000 will be required for this purpose.

THE ARTILLERY SCHOOL.

Of the 45 officers who entered the school, 32 were graduated, 2 completed the course but failed to graduate, 12 failed to complete the course; one of these, however, was graduated by special authority of the War Department. Of these last, 5 were ordered away from the school early in the course for duty in connection with the transport service.

The class in the department for master gunners numbered originally 21 men, of whom 19 completed the course, but only 8 received certificates of proficiency.

The instruction at the school during this year has been essentially of a practical nature, all theoretical work not absolutely necessary having been omitted. The result has been an increase in interest by the average student officer, while the extreme development of individual officers of marked capacity has been thereby to some extent sacrificed.

This difficulty will be met in the future years of the school by a logical division of the curriculum into what may be described as elementary and advanced courses. All officers will in natural course take the elementary work; but only officers whose aptitude is such as to warrant expectation of full benefit from the advanced course will take the latter.

The intention is to combine the artillery school at Fort Monroe with the school of submarine defense, now at Fort Totten, the combined school to be located at Fort Monroe as soon as proper buildings therefor can be constructed.

Pending the final consolidation at Fort Monroe, the entire subject-matter taught at the two schools has been coordinated and separated into first and second year work, the first year work alone to be taught at Fort Monroe during the school year 1907–8. The students who will have completed the course will then be available for selection to take the second year's course whenever they may be needed.

With the coming school year, then, begins the virtual consolidation of the two schools into one thoroughly coordinated, systematized, and flexible system, permitting the greatest efficiency, with no repetition or confusion.

After the consolidation at Fort Monroe, the elementary and advanced classes will pursue their work at the same time, and in the same departments of the school, the advanced work being but the further development of the first year work.

As to the character of the two courses, it is sufficiently descriptive to say that the first year course embraces only work of immediate practical application in the daily work of a coast artillery officer. The second year course consists of advanced analytical and experimental work, the instruction being confined to such officers as are by ability, aptitude, and zeal fitted to fully profit by taking such a course.

It is believed that such a division of the complete course, into what amounts to under and post graduate courses, will enable discrimination to be exercised as to the amount of instruction to be imparted to an individual, and provide a criterion for use in such discrimination; and that the efficiency of the corps will thereby be greatly increased.

No less important is that portion of the combined school which it is proposed to devote to the education of specialists among the enlisted personnel.

The recent act of Congress provided for additional noncommissioned officers whose work is of special importance. Among these may be mentioned as typical master gunners, electrician-sergeants, and engineers. The combined school will incorporate at Fort Monroe *the school for* electrician-sergeants (now at Fort Totten); and the

school for master gunners (at Fort Monroe). To these will be added a third school, namely, for engineers, the whole to form a department of the combined school.

The benefit to be derived from such instruction is not a matter of speculation, that from the first two courses having been already demonstrated and that from the third, is evident. Accuracy in charts and mechanical drawings and in all ordinary calculation and measurements are secured by the course for master gunners; efficiency and life of material by the other two courses. Without these it is easily recognized that coast artillery work would be seriously crippled.

In view of the fact that the first year course of the officers' division of the school has been reduced to practical work which any coast artillery officer should be capable of performing as an ordinary duty, it is clearly false economy to waste further time on officers incompetent to complete such an elementary course. Should an officer under the new conditions prove that he can not pass the elementary course, but one logical conclusion remains, viz, that he is incapable of performing even the ordinary duties of an artillery officer. Hence, he should be dropped from the rolls. It is hardly to be thought that an examination for promotion, of a few days' duration, should overrule the decision of a practical school which has closely observed the work of the officer for an entire year during which his sole duty has been to apply himself to that work. Legislation requiring such officers as fail in the first year's course to be immediately eliminated by the very fact of such failure would be a vast improvement upon present conditions.

SCHOOL OF SUBMARINE DEFENSE.

The class of student officers graduating this year consists of 10 captains.

On July 1, 1907, 32 enlisted men received certificates qualifying them for the position of electrician sergeants. These men completed the course in this department on June 18, 1907, were given certificates of proficiency by the school board, and were reported by the commandant to the War Department for appointment as electrician sergeants under the provisions of paragraph 28, General Orders, No. 116, War Department, 1906.

Under the provisions of paragraph 3, General Orders, No. 77, War Department, 1907, a theoretical examination of applicants for appointment as master electricians was held at various places throughout the country on June 1, 1907, a notice of the examination having been previously published.

Five enlisted men reported for the examination.

The theoretical examination was passed by 5 candidates. Upon the recommendation of the school board the practical examination of 2 candidates was waived by the War Department. All 7 were appointed to the grade of master electrician and assigned to various districts for duty.

On November 20, 1906, in accordance with General Orders, No. 108, War Department, 1904, 47 enlisted men of the depot torpedo company, specially qualified in submarine work, were transferred to other companies of Coast Artillery Corps (torpedo companies and on

board torpedo planters); per Special Orders, No. 3, War Department, January 4, 1907, 60 men were transferred to the depot torpedo company from other companies of Coast Artillery Corps.

The programmes of the different departments for the school year of 1906 and 1907, as arranged by the school board and approved by the Chief of Staff August 2, 1904, were followed throughout the year.

The work in the department of electricity, mines, and mechanism has been exceedingly satisfactory. It is thought, however, that even better results would obtain if the department were divided into two departments, one to be known as the department of electricity and mechanism and the other to be known as the department of mines. The Signal Corps is now installing a complete equipment of wireless telegraphy at Fort Totten, and it is planned to include this subject in the next year course of the department of electricity and mechanism, and also to greatly extend the instruction in the practical use of searchlights. It is thought to be important also to extend the practical work in planting mines and in the service of the mine field, and that work would naturally fall to the department of mines.

The work of the department of chemistry and explosives was carried on precisely as described in former reports.

An exceedingly valuable system of experiments in connection with exploding gun cotton has been conducted in this department. These experiments have not as yet been completed. A special report covering the same will be submitted at a later date. A testing ring, drop test machine, and a special form of Quinan gauge have been constructed, and a more practical course of instruction in testing explosives will be carried on during the course next year.

The work in the electrician sergeants' department has been the same as in the preceding year, with very satisfactory results. Arrangements are now being made to instruct 70 men for electrician sergeants during the coming year; also for the instruction of a class of 20 firemen each three months during the same period.

The reports of instruction in torpedo work at the posts visited by the torpedo planters have been very satisfactory. A very valuable set of experiments with automatic anchors was conducted at Key West during the year. The experimentation in this line is still under way, with promising indications that a satisfactory anchor will be developed in a short time.

Beginning with the approaching school year, it is contemplated that the first year elementary course of the consolidated artillery school and submarine defense school at Fort Totten will be conducted at Fort Monroe. The advanced course will be conducted at Fort Monroe as soon as accommodations can be provided thereat.

ARTILLERY BOARD.

The artillery board, as organized for the major portion of the past fiscal year, has consisted of one major, who was also a fire commander; three captains, who were in command of a 12-inch gun battery, a 10-inch gun battery, and a mortar battery, respectively, and retained administrative control of their companies; one captain, for consideration of ballistic and mathematical questions only, who was also an instructor in the artillery school, and one first lieutenant, as recorder,

the last being excused from all other duty. The board has had as assistants a computer and draftsman, a stenographer, and two enlisted men detailed by the post commander.

The character of the work considered by the board has been both practical and theoretical. Devices designed for the improvement of artillery material, suggestions for changes in fire-control installation, recommendations looking to improved methods of drill and instruction, and many other matters relating to the work and efficiency of the coast artillery have been referred to the board for consideration. In addition to subjects referred to the board by the Chief of Artillery, members thereof have been encouraged to submit suggestions resulting from experience during drill and practice. During the year ending June 30, 1907, 198 subjects of the general character outlined above have been referred to the board, and 188 of the subjects, many of them involving extended experimentation and calculation, have been reported upon. Among the subjects considered were the following:

Methods of signaling from shore to ships in offing (visual and wireless); calculations for graduating range scales of guns emplaced; uniforms for coast artillery troops; systems of position finding for mortars; methods of accounting for ordnance property in artillery districts; equipment for observing stations and plotting rooms; consideration of the Braccialini base telemeter; the use of shell tracers on projectiles for seacoast guns; the effect of diurnal variation of temperature on the elevation of guns mounted on disappearing carriages; test of the 8-foot self-contained range finder; test of the 25-foot self-contained range finder; calculations for determining perforation of armament; preparation of range and ballistic tables; location of searchlights; consideration of an automatic sight; device for using gun as a primary station of a base line; location of base-end stations and plotting rooms; amendments to general orders relating to the Coast Artillery; revision of the coast artillery instruction order; test of the Lewis depression position finder, involving the taking and checking of 3,300 observations, and compilation of tables showing results, and amendments to coast artillery drill regulations.

TORPEDO BOARD.

The work of the torpedo board during the year may be summarized as follows:

Reports and recommendations to the Chief of Artillery on such matters as were referred to it for this purpose. The principal subjects coming under this head were contained in 122 papers sent to the board from time to time concerning the material and personnel of the submarine mine defense of the United States. The revision of the Provisional Torpedo Manual for the new system was completed; the regulations for the torpedo planters were revised, as were also the service. A course of study for the several grades of noncommissioned officers added to the Artillery Corps by recent legislation was devised, the necessary details of the competitive examinations for admission to the several grades were arranged, and the most favorable assignment of the new men to posts and districts was determined by the board. Recommendations were also made on the following:

Location of submarine mine cables in various harbors with reference to other submarine cables; connections and protection of shore

ends and terminals; changes in plans for torpedo structures, and improvement in the equipment of mine stations and casemates.

Such revision and elaboration of the plans for the submarine defense of various harbors in the United States and insular possessions as were made necessary by changes in the system and equipment and local conditions.

Continuation of experimental work in connection with the development of our system of submarine mines, especially in reference to automatic anchors, of which a satisfactory type seems to have been obtained, to a fuze can which permits the explosion of wet gun cotton with certainty of action and to a special type of range finder suitable for use in the mine command. No experimental work has been found possible with dirigible torpedoes, of which several types were brought to the attention of the Board.

Recommendations for the expenditure of the appropriations of the fiscal year 1907–8 for submarine mine structures and material, and the preparation of estimates of the amounts necessary for the completion of the submarine mine defense of home and insular ports in accordance with the recommendations of the National Coast Defense Board.

TORPEDO DEPOT.

The disbursing officer of the torpedo depot, under the direction of the torpedo board, has purchased during the year the necessary material of the new system for the equipment of the casemates and mine fields of 23 of the 41 posts recommended by the National Coast Defense Board for submarine mine defense. This makes a total of 29 posts in the United States for which material of the new system has been purchased. These posts, however, will still lack searchlights, position finders, mine commanders' telescopes, automatic anchors, and explosives, as well as launches and some other accessories necessary to successful operation of the system before they may be said to be fully equipped for action.

With the money available for the fiscal year 1907–8 it is proposed to equip 8 additional posts in the United States and 1 in the insular possessions, which will leave 4 posts in the United States and 7 in the insular possessions recommended for submarine mine defense for which no provision has been made.

The plan of last year has been followed in the expenditure of funds—that is, the amounts necessary for the maintenance of the equipment on hand, which amounts naturally increase each year, are reserved for this purpose, and the remaining money is expended in equipping additional posts with the new system in the order of their importance.

THE FIELD ARTILLERY.

The act of Congress approved January 25, 1907, marked an epoch in the history of field artillery in this country. This act, as above stated, provided for the permanent separation of the Field Artillery from the Coast Artillery and the organization of the former into six regiments, each regiment to comprise six batteries organized into two battalions of three batteries each.

The permanent separation of the two branches of artillery is of *undoubted* wisdom. The Field Artillery is an element of the mobile

army, closely related to the other elements thereof, while the Coast Artillery has to do with the fixed defenses of our coasts, and its functions are in no way related to those of the mobile army.

The regimental organization provided is a recognition of the lessons of the recent Russo-Japanese war and the most advanced opinions on field artillery organization. These lessons emphasize the importance of field artillery on the field of battle, and demonstrate the necessity of up-to-date efficiency in this arm at all times. The advantage to an army superior in field artillery has been so thoroughly demonstrated and recognized that every nation of importance is putting forth special activity in developing and perfecting the organization and equipment of this arm. It is manifest under these conditions that to stand still is to fall hopelessly behind, for efficient field artillery in these days is attained only by constant effort and progressive development. No amount of money can produce it at short notice. The organization given by the Congress meets all present requirements. In this connection it is proper to remark that a large number of experienced field artillery officers prefer the organization of the six batteries to a regiment into three battalions of two batteries each, instead of two battalions of three batteries each, as now provided by law. It is believed, however, that the present organization follows more closely the teachings of the Russo-Japanese war, and should at least be given a fair service trial before any change is recommended.

STRENGTH.

The war strength of the authorized 30 regiments of infantry is, in round numbers, 47,000 men; this number is possible under existing law. The maximum number of field guns possible under the existing law is 144. This, therefore, gives us 3 guns per 1,000 rifles. This is an approximately correct relative strength, though 3⅓ guns per thousand is the minimum that should be provided for a properly organized command. Thus, the organized strength of the Field Artillery is sufficient to permit thorough efficiency in the arm; but it must be pointed out that the strength is adequate only to an army comprising 43,000 infantry.

The permanent separation under the act above mentioned was effected on May 4, 1907. Some delay was due to the necessity of hearing from officers on foreign service in regard to their "individual preferences," an element required by the law to be considered in making permanent assignments of officers of the Artillery Corps to the field and coast artillery, respectively. The organization of the Field Artillery into regiments was effected in orders dated May 31, 1907. Three regiments were organized as light regiments, two as mountain regiments, and one as a horse regiment. We thus have these three varieties of field artillery suitably organized, so that they can keep abreast of the times.

The mountain artillery is not so far advanced as the horse and light artillery. Its equipment is of an obsolete pattern, though yet efficient. A new and up-to-date design of mountain-gun equipment is receiving the attention of the Ordnance Department. At the time of the reorganization two batteries were equipped as siege batteries, and as these batteries were equipped with entirely obsolete material belonging to an obsolete system, it was decided to call in their equip-

ment and equip them as light batteries. The importance of heavy field artillery is not disparaged by such action, however. On the contrary, this is an indispensable element of field artillery, and batteries of this class will be organized as soon as the Ordnance Department is prepared to furnish equipment for them. Such equipment has been designed by the Ordnance Department and is in process of manufacture. The development of suitable equipment for field-artillery fire control has been the constant effort of the Ordnance Department in connection with the Feld Artillery Board.

FIELD ARTILLERY BOARD.

The field artillery board at Fort Riley has been of marked assistance in the solution of technical questions pertaining to the Field Artillery.

The work of the board has covered the completion and revision of the Provisional Drill Regulations, Field Artillery; the test of powders, fuses, projectiles, various devices for improvement of the field artillery material, fire-control equipment, including telescopes, sights, range finders, etc. In all these tests and trials the board has rendered valuable reports, which have contributed materially to the improvement by the Ordnance Department of the articles tested. As a result of the cooperation of the Board and the Ordnance Department, the fire-control equipment has been well-nigh perfected. The question of a suitable range finder has not been definitely solved, but much progress has been made, and the indications are that from the several types under test one will be selected in the near future, and, in satisfactorily modified form, be adopted for the service.

The foregoing report shows that the conditions affecting both the coast and field artillery have been greatly improved during the past year. The reorganization of the personnel of each arm has operated to the benefit of each, and increasingly will continue to do so. Progress has been made in installing artillery material in so far as appropriations have permitted.

It is urgently recommended that appropriations be made for the ensuing year to include barracks and quarters for both coast and field artillery, made necessary by the act of January 25, 1907, the installation of the standard fire-control system at Narragansett Bay, eastern entrance to Long Island Sound, and Hampton Roads, the installation of power plants and searchlights in the United States, the completion of the gun and mine defenses at Manila, Subig Bay, and Hawaii, and for continuing the joint army and militia coast-defense exercises.

Very respectfully,

ARTHUR MURRAY,
Brigadier-General, Chief of Artillery.

The CHIEF OF STAFF, U. S. ARMY.

REPORT OF THE BOARD OF ORDNANCE AND FORTIFICATION.

REPORT OF THE BOARD OF ORDNANCE AND FORTIFICATION.

WASHINGTON, *October 25, 1907.*

SIR: Under the provisions of the act approved February 24, 1891, the Board of Ordnance and Fortification has the honor to submit, for transmission to Congress, its seventeenth annual report, covering the fiscal year from July 1, 1906, to June 30, 1907.

CHANGES IN PERSONNEL.

The personnel of the Board has remained unchanged, except that Brig. Gen. Thomas H. Barry was relieved by paragraph 17, Special Orders, No. 41, February 18, 1907, and Maj. Gen. J. Franklin Bell, Chief of Staff, detailed as a member. By paragraph 25, Special Orders, No. 130, June 4, 1907, Brig. Gen. William P. Duvall, General Staff, was detailed to act as a member during the absence only of General Bell.

The Board now consists of the following-named officers: Maj. Gen. J. Franklin Bell, Chief of Staff, president; Brig. Gen. William Crozier, Chief of Ordnance; Brig. Gen. A. Mackenzie, Chief of Engineers; Brig. Gen. Arthur Murray, Chief of Artillery; Lieut. Col. George F. E. Harrison, Coast Artillery Corps; Lieut. Col. Erasmus M. Weaver, Coast Artillery Corps; and Gen. Thos. J. Henderson, civilian member. Maj. Lawson M. Fuller, Ordnance Department, continues as recorder.

LEGISLATION.

The only special legislation affecting the Board is contained in the fortifications appropriation act approved March 2, 1907, making appropriation for continuing the work of the Board, as follows:

To enable the Board to make all needful and proper purchases, experiments, and tests to ascertain, with a view to their utilization by the Government, the most effective guns, small arms, cartridges, projectiles, fuzes, explosives, torpedoes, armor plates, and other implements and engines of war, and to purchase or cause to be manufactured, under authority of the Secretary of War, such guns, carriages, armor plates, and other war material as may, in the judgment of the Board, be necessary in the proper discharge of the duty devolved upon it by the act approved September twenty-second, eighteen hundred and eighty-eight; to pay the salary of the civilian member of the Board of Ordnance and Fortification provided by the act of February twenty-fourth, eighteen hundred and ninety-one, and for the necessary traveling expenses of said member when traveling on duty as contemplated in said act; for the payment of the necessary expenses of the Board, including a per diem allowance to each officer detailed to serve thereon when employed on duty away from his permanent station, of two dollars and fifty cents a day; and for the test of experimental guns, carriages, and other devices procured in accordance with the recommendation of the

Board of Ordnance and Fortification, twenty-five thousand dollars, the expenditure of which shall be made by the several bureaus of the War Department heretofore having jurisdiction of the same, or by the Board itself, as the Secretary of War may direct: *Provided*, That before any money shall be expended in the construction or test of any gun, gun carriage, ammunition, or implements under the supervision of the said Board, the Board shall be satisfied, after due inquiry, that the Government of the United States has a lawful right to use the inventions involved in the construction of such gun, gun carriage, ammunition, or implements, or that the construction or test is made at the request of a person either having such lawful right or authorized to convey the same to the Government.

GENERAL OPERATIONS.

The Board is required by statute to submit a statement of its general operations. The objects for which allotments have been made are discussed under appropriate headings, but the operations of the Board have consisted, in the main, of the supervision of work previously undertaken, such as the continuation of the tests of plates representing the main and secondary armor of battle ships to determine their resistance to projectiles of various sorts fired at different angles of impact, the data obtained being used for the formulation of battle tactics; the tests of wire-wound guns to determine their availability for adoption, and the perfection of instruments for fire control and direction. The increasing importance of searchlights in warfare has also induced allotments for several experiments with the object of improving this necessary auxiliary.

Many suggestions are received from persons unfamiliar with the requirements of modern artillery practice and fortress armament which are often absurd or have been previously tried and discarded, so that the number of rejected plans far exceeds those recommended for trial. All plans have, however, been carefully considered and no project has been rejected without good and sufficient reason. A list of the subjects considered by the Board will be found in Appendix B.

ARMOR-PLATE TESTS.

January 4, 1906, the Board made an allotment of $54,019.40 to cover the cost of targets, armor plates, projectiles, powder, fuzes, and all other expenses, including labor, of making tests of armor plate in accordance with program submitted by the Chief of Ordnance at the request of the Board. On May 2, 1907, an allotment of $2,500 was made for continuing the experiments.

FOURTEEN-INCH WIRE-WOUND GUN.

Under date of March 7, 1907, the Chief of Ordnance presented to the Board the question of the practicability of wire winding for guns of 14 inches caliber, the caliber recommended by the National Coast Defense Board for the defense of certain positions. The Board recommended that one 14-inch gun be constructed on the wire-wound system, in accordance with plans submitted.

EXPERIMENTAL GUNS AND CARRIAGES.

Brown 10-inch segmental-tube wire-wound gun.—This gun was built under an allotment of $33,000 made by the Board September 15, 1896. Its test was begun in February, 1901, and in the two years fol-

lowing it was fired a total of 24 rounds, mishaps of various kinds necessitating its removal from the proving ground for repairs. The last round fired from the gun was on October 28, 1903, following which permission was granted the Company to remove the gun for alteration of the breech mechanism, which had operated in an unsatisfactory manner throughout the test. The gun was taken to the shops in Reading in January, 1905, that the desired changes might be made. It has not been returned so far, and, as remarked in the last annual report of the Board, it is doubtful when the repairs will be completed and the gun returned for continuance of tests.

Brown 6-inch segmental-tube wire-wound gun.—The act approved June 6, 1902, providing for fortifications and other works of defense, including the armament thereof, contained a provision that, in the discretion of the Secretary of War, a portion of the money appropriated could be used for the purchase of material for a limited number of steel-wire seacoast guns. The trustees of the Brown wire-gun patents made application to the Secretary of War to be permitted to furnish guns of their design under this clause.

The Secretary of War, on July 21, 1902, referred to the Board for consideration and recommendation the question whether or not it was advisable to adopt as a type the Brown segmental-tube wire-wound gun, and to purchase or construct guns of that description for the service of the United States.

On August 7, 1902, the Board replied that "it is not at present prepared to recommend the Brown segmental-tube wire-wound gun as a type for the service." The Board did, however, recommend, and the Secretary of War approved, an allotment of $25,000 to procure one Brown 6-inch wire-wound gun, with suitable mount, implements and accessories, and 500 rounds of ammunition. This allotment was, on December 4, 1902, increased $16,000 upon the representation of the trustees as to the cost of manufacture, and the amount of ammunition to be furnished was reduced to 250 rounds.

On May 4, 1905, a further allotment of $3,960 was made to provide 30 additional rounds of ammunition—and a like number for the Crozier gun—for rapidity test. March 10, 1906, an allotment of $400 was made for repairing gas check seat of the gun and for rebanding ten projectiles for continuing the tests. The total amount allotted for purchase of the gun and mount and expenses of test is therefore $43,380.

In March, 1906, the gun was removed from the proving ground for repairs to the breech mechanism, and returned the latter part of July.

The tests were continued from that time until February of the present year, the aggregate number of rounds fired being 98. The condition of the gun at this time was such that the Board determined to make no further firings in continuance of the test, and recommended the appointment of a committee of experts in gun construction with a view to aiding the Board in determining the relative merits of the Crozier and Brown systems of gun construction.

Crozier 6-inch wire-wound gun.—The Board at its meeting September 10, 1903, made an allotment of $11,000 for the construction of a wire-wound gun on the design of Gen. William Crozier, Chief of Ordnance. This gun differs in many respects from the Brown 6-inch gun, the most notable difference being the absence of the segmental

tube, which is the characteristic feature of the Brown system, and the object of the allotment was to make a test of an additional system of construction.

On June 2, 1904, the Board made an allotment of $16,537 to procure 250 rounds of ammunition for the test of the gun and at the same time approved program for its test and that of the Brown 6-inch wire gun. September 19, 1904, $1,200 was allotted to enable the gun to be completed, and on January 4, 1906, a further allotment of $1,140 was made to procure a new breechblock and other necessary parts of the breech mechanism which had been damaged by a fire at the proving ground. The aggregate amount allotted for this gun and its test, exclusive of mount, is $31,857, which includes one-half of the $3,960 allotted May 4, 1905, for 60 rounds of ammunition for rapidity test of this and the Brown 6-inch wire gun.

Test of this gun has been carried on under the same program as the Brown gun and, so far as possible, simultaneously. It has been fired a total of 98 rounds, and the firing record submitted to the same committee of experts for examination and comparison with the results obtained by the Brown design.

AUTOMATIC AND SEMIAUTOMATIC GUNS AND MOUNTS.

De Knight automatic machine gun.—On August 7, 1902, the De Knight Gun Company exhibited to the Board its automatic machine gun, caliber .30. The Company was requested to send the gun to Springfield Armory to be subjected to the usual tests at the expense of the Government.

The material was presented at Springfield Armory and on several occasions withdrawn from test for the correction of structural and other defects developed during the tests.

Test was finally renewed in February, 1905, 834 rounds being successfully fired, when the barrel burst and broke part of the water jacket and the breech casing, so that further test became impossible. As nearly as may be ascertained, 2,535 rounds had been fired through this barrel before it burst.

On February 28, 1905, the company requested an allotment to cover the cost of repairs to the gun, but the Board, on April 6, 1905, made an allotment of $2,000 for the purchase of the gun and mount, with the provision that the gun be first properly repaired. The material has since been accepted, and on April 4, 1907, after some tests had been conducted, an allotment of $200 was made for repair of the gun and continuation of its test.

Vickers-Maxim 1-pounder automatic gun.—April 4, 1900, the Board made an allotment of $8,300 for the purchase of a Vickers-Maxim 1-pounder automatic gun and carriage and 2,000 rounds of ammunition. The material was tested in the fall of 1902, 966 rounds being fired under the program adopted. No action was taken on the material pending completion of test of the McClean gun.

Hotchkiss 1-pounder automatic gun.—On June 8, 1900, the Board made an allotment of $4,052.50 to purchase from the American Ordnance Company a Hotchkiss 1-pounder automatic gun and carriage, and on October 4, 1900, an additional allotment of $1,300 to procure the ammunition necessary for test of the gun.

The gun was delivered in November, 1900, and on March 6, 1901, was fired in the presence of the Board. After 186 rounds of the pro-

gram had been fired an offer was made by the Hotchkiss Company to exchange the gun and mount for one of the latest design without expense to the Government. The offer was accepted and the material delivered. Test of the gun and mount has been completed, 714 rounds having been fired with the new gun, but, as in the case of the Vickers-Maxim gun, no action has been taken.

McClean 1-pounder automatic gun.—In April and June, 1899, the Board made allotments aggregating $884.28 to reimburse the Navy Department for a 1-pounder rifle barrel and 500 rounds of ammunition furnished S. N. McClean, who had submitted to the Board a 1-pounder automatic gun and mount. On January 26, 1900, the Board witnessed a preliminary firing test of the gun, and on May 4, 1900, made an allotment of $3,000 for the purchase of 1,000 rounds of ammunition and to cover other incidental expenses of a thorough firing test of the equipment as soon as completed. In August, 1900, 500 rounds of ammunition were furnished Mr. McClean for use in the experimental development of his gun and the cost charged to the allotment of $3,000.

On May 23, 1903, the Board witnessed an exhibition test of the gun at the Sandy Hook Proving Ground, at which time the Vickers-Maxim and Hotchkiss guns were also fired. The gun was then removed for repairs, and was returned to the proving ground in March, 1904, when its test was resumed; 670 rounds were fired under the program, but as the elevating and traversing mechanisms were unsatisfactory in design, permission was granted on April 7, 1904, for the withdrawal of the material for the purpose of remedying the defects.

A supplemental program for completing the test of the gun was approved on June 2, 1904, when the gun was returned to the proving ground, but as the ammunition furnished by Mr. McClean was not suitable, further test was postponed. Suitable ammunition having been provided, the tests were resumed and completed. As several defects developed during the test which Mr. McClean claimed could be overcome, the Board on November 10, 1904, stated that if he would deliver at the Sandy Hook Proving Ground, free of expense to the United States, an improved automatic 1-pounder gun it would be tested, and made an allotment of $1,000 to provide ammunition for the purpose.

The remodeled gun was delivered, but the failure of the gas-operated piston to work properly rendered the trials unsatisfactory, and on October 24, 1905, Mr. McClean was authorized to increase the size of the piston rod, when the gun would be subjected to further tests, the unexpended balance of the allotment of November 10, 1904, being made available for purchase of the necessary ammunition.

On November 1, 1906, the unexpended balance of the allotment of November 10, 1904, was made available for the test of a new model, and at the same time an allotment of $200 was made to cover the cost of the necessary ammunition for test of a musket-caliber automatic gun of Mr. McClean's design.

There has been considerable correspondence on the subject, but so far Mr. McClean has not presented his material for test.

Six-pounder semiautomatic guns and mounts.—The Board, at its meeting December 3, 1903, recommended the adoption of 6-pounder

guns on pedestal mounts as a part of the coast-defense armament, and in order to determine the most effective guns and mounts made the following allotments for the purchase of 6-pounder semiautomatic guns of nickel steel, having a muzzle velocity of 3,000 feet per second, with pedestal mounts, viz: Driggs-Seabury Ordnance Corporation, December 3, 1903, $3,600; American and British Manufacturing Company, May 5, 1904, $3,500, September 23, 1904, $142.42; Benét-Hotchkiss, December 3, 1903, $3,200, January 7, 1904, $590, March 3, 1904, $80, June 7, 1906, $30.31; United States Rapid Fire Gun and Power Company, April 7, 1904, $3,398.76, June 2, 1904, $483.38.

To provide for the test of these guns, the Board, on May 5, 1904, made an allotment of $16,000 to cover all expenses incident to test, including the necessary ammunition.

Test of the four guns has been completed, each having been fired approximately 500 rounds.

At the time these guns were procured for test it was expected that the caliber and type would form part of the system of coast defense. Later developments and plans have resulted in the abandonment of this intention, however, and in consequence no determination has been reached as to the relative merits of the several designs. The gun submitted by the American Ordnance Company is in use in another series of experiments relating to powder pressures.

Seven and one-half-pounder semiautomatic gun.—On February 2, 1905, the Board made an allotment of $6,000 for the construction of one 7½-pounder semiautomatic gun with long-recoil, broad-tired field carriage and limber, to determine its suitability for use as a mobile coast-defense gun. Program for test of the material was approved on April 17, 1906, and on June 18, 1906, the gun, carriage, and limber were shipped to the proving ground, where they are now undergoing test.

The gun had been fired 192 rounds at the date of the last report received.

Fifteen-pounder semiautomatic gun and mount.—March 3, 1904, the Board made an allotment of $10,000 for the construction of a 15-pounder semiautomatic gun and mount, to be made in accordance with designs submitted by the Chief of Ordnance. The allotment also covers the cost of 100 rounds of ammunition. An additional $2,000 was allotted on September 19, 1904, for completion of the gun and mount.

Program for test of the material was approved February 2, 1905, and test was commenced in the spring of that year, resulting in a recommendation from the Chief of Ordnance that the program be modified in certain particulars. On October 24, 1905, the Board approved of the modification and extension of the program and made an allotment of $3,366 for alteration of the gun and to carry out the provisions of the modified program and to provide 200 additional rounds of ammunition.

The test is in progress.

THE EMERY DISAPPEARING CARRIAGE.

The construction of the Emery 12-inch elevating carriage was authorized by special act of Congress appropriating $130,000 for the purpose in February, 1893, and a contract was entered into in March of that year with Mr. A. H. Emery, though the actual work of construction was not commenced until 1896, when, by act of June 6, an

additional appropriation of $10,000 was made for a loading apparatus for the carriage and the inventor was relieved of the obligation of giving bond for the return of any money paid him should the carriage not prove to be successful. By act of May 25, 1900, the sum of $40,000 was added to the contract price of the carriage, and by act of March 3, 1903, the further sum of $40,000 was appropriated to enable Mr. Emery "to complete and erect the 12-inch carriage." The total amount appropriated for this carriage and appurtenances is therefore $220,000, of which $135,656.98 was paid.

The fortifications appropriation act of April 21, 1904, contained a provision authorizing the Secretary of War, in his discretion, to close the contract under which Mr. Emery was making the 12-inch carriage and to contract with him for either an 8 or 10-inch carriage to be furnished in place thereof, together with its foundations, erection, and preliminary tests ready for proof-tests by the Board, and to pay for this new carriage authorized the expenditure of the $84,343.02 remaining from prior appropriations, payment to be made "in such sums and at such times" as the Secretary of War "shall, in his discretion, think best."

In accordance with the provisions of the act referred to, all work on the 12-inch carriage was suspended, and on June 13, 1904, a contract was entered into by the Chief of Ordnance with Mr. Emery for one 10-inch carriage of his design. Payments under this contract are made by the Chief of Ordnance, and the Board is not informed of the progress of the work or of the probability of its early completion, though the tests are to be made under the direction of this Board when the material is delivered.

RANGE FINDERS.

Warner & Swasey range finders.—March 3, 1904, the Board made an allotment of $5,000 for the construction of a horizontal base range finder of a design submitted by the Warner & Swasey Company. The instrument has a self-contained base line 25 feet long. Tests made with a quarter-size model demonstrated its probable efficiency, but the allotment was made with the condition that no payment would be made for the instrument unless the results of its test are satisfactory to the Board.

On October 4, 1906, an allotment of $800 was made to erect a temporary building at Fort Monroe for test of the instrument, which was then tested by the Artillery Board. The result was not entirely satisfactory, and the Chief of Artillery has directed that it be further tested.

At the time the allotment of $5,000 was made the company was requested to permit test of the quarter-size model at Fort Monroe to determine its utility for identification purposes for rapid-fire guns at the shorter ranges. Instead of doing this, however, the Company submitted an 8-foot base instrument, which has been tested and reported upon by the Artillery Board, but no action has been taken on the report pending results of tests of the larger instrument and another 8-foot instrument purchased under allotments of November 10, 1904, and January 5, 1905, amounting to $975, for test by the Torpedo Board at Fort Totten to determine its suitability for use in the submarine mine fire-control system. The latter instrument has

already been given a careful preliminary test by the Ordnance Board at Sandy Hook and is now at Fort Totten for test by the Torpedo Board.

Competitive test.—As the result of a competitive test of depression range finders in the spring of 1906, it was recommended that the Warner & Swasey instrument be retained as the type or service model, but all interested parties were informed that the Board would continue its policy of testing improved devices whenever presented, with a view to raising the standard when possible. The Keuffel & Esser Company, believing it could largely improve the Whistler-Hearn range finder, was granted permission to install the instrument at Fort Wadsworth for its own preliminary tests. A new instrument, designed by Maj. I. N. Lewis, Coast Artillery Corps, was also tested at Fort Monroe. Other designers having signified their intention of submitting improved position finders, the Board has arranged to conduct a competitive test, beginning October 7, 1907, at Fort Wadsworth, N. Y., where the facilities for testing a number of instruments are better than at Fort Monroe. The following instruments have been entered for this test, viz: The Warner & Swasey Company, the Whistler-Hearn, the Lewis, the Rafferty, and the Bausch-Lomb-Saegmuller Company.

ARTILLERY DEVICES.

Isham recoil spade.—October 16, 1902, the Board made an allotment of $250 for construction of a recoil device for field guns, the design of W. S. Isham. May 28, 1903, an additional allotment of $50 was made, and July 30, 1903, a further allotment of $147.87 for the same purpose. No progress having been made, on December 1, 1906, the unexpended balance of allotments was revoked.

Fergusson device for continuous laying of guns.—November 5, 1903, the Board made an allotment of $250 for the construction and test of a device designed by Capt. F. K. Fergusson, Coast Artillery Corps, for securing continuous laying of guns in elevation. On August 11, 1904, an additional allotment of $300 was made for completion of the device, which was installed on a gun at Fort Monroe and tested by the Artillery Board. The device was designed before the adoption of the present system of range finding and fire direction and accomplishes nothing not more easily done by other methods.

Rowan reflecting sight.—August 11, 1904, an allotment of $250 was made for the construction and test of a reflecting sight, in accordance with design proposed by Maj. Hamilton Rowan, Coast Artillery Corps. December 1, 1904, December 7, 1905, and December 6, 1906, further allotments of $85, $3, and $145 were made to cover cost of the device. The sight, which is now at Fort Monroe, will be tested as soon as it is installed on a carriage.

Searchlight reflector.—June 24, 1904, an allotment of $800 was made for the purchase and test of one experimental truck and searchlight reflector upon recommendation of the Board of Engineers. The material is now at Fort Totten, N. Y., awaiting test by that board.

Portable searchlight for field artillery.—October 4, 1906, the Board made an allotment of $6,500 for the development of a portable searchlight for use with the field artillery. After exhaustive study, specifications for an outfit have been prepared, and the material will be procured as soon as practicable.

MISCELLANEOUS.

Subtarget gun machines.—April 18, 1903, the Board made an allotment of $1,000 for the purchase of four subtarget gun machines, a device designed to aid in instruction in aiming small arms, and intended to replace the tripod and sand bag. May 5, 1904, $1,000 was allotted for the purchase of four more machines of improved pattern, and the eight machines were tested at as many different posts. On March 7, 1907, a further allotment of $500 was made to procure two machines for experimental test at the newly established School of Musketry at the Presidio of Monterey, California.

Early in December, 1906, four of the gun machines were sent to Fort Riley for test by the Cavalry Board and four to Fort Leavenworth for similar test by the Infantry Board. The instructions contemplated that two squads of the same number each of inexperienced men be instructed, one squad on the subtarget machine and the other by the usual methods. Both squads were then to take up the regular course of firing on the range and the records made compared with one another.

Morris tube outfits.—March 2, 1905, an allotment of $250 was made for the purchase of two Morris tube outfits and their adaptation to coast-defense guns for test in connection with the development of a system of training gunners. Additional allotments for completing and installing the devices were made as follows: June 29, 1905, $270; December 7, 1905, $75, and July 14, 1906, $10. A preliminary report was made by the Artillery Board on May 12, 1906, and as the result of its recommendations the allotment of July 14 was made.

Final report has not been received.

Powell gun-sling catch.—March 2, 1905, the Board made an allotment of $150 for the manufacture of 150 gun slings with an improved catch or hook, designed by Lieut. Leighton Powell, Sixth Infantry. The slings were manufactured at Rock Island Arsenal, and on September 21, 1905, a further allotment of $117 was made to cover their cost. They have been distributed for test by troops in service and reports are expected shortly.

Disappearing platform for searchlight.—April 6, 1905, the Board made an allotment of $2,500 for the construction and erection of an experimental disappearing platform for a 36-inch searchlight of design submitted by Capt. E. H. Schulz, Corps of Engineers. This device is intended to meet the need for masking lights, and also to prevent their location being discovered during daylight.

Preliminary tests showed that the platform was difficult to elevate as constructed, and on June 7, 1906, an allotment of $400 was made to procure and attach additional counterweights.

Final tests were conducted by a committee of the Board in December, 1906, with the result that on January 3, 1907, the Board recommended that the device be not adopted, as the purpose for which it was designed could be more economically accomplished by other means.

Gottlieb searchlight controllers.—January 4, 1906, an allotment of $755 was made for the construction and test of one each of two forms of controllers for searchlights proposed by Lieut. E. Gottlieb, Coast Artillery Corps. The controllers were installed on a searchlight at Fort Williams, Me., and tested in the presence of a committee of the

Board. The tests suggested the possibility of other improvements, and resulted in the action outlined in the next paragraph.

Improvements in searchlights.—On December 6, 1906, the Board allotted the sum of $4,000 to cover the expenses of conducting experiments proposed by Lieut. E. Gottlieb, Coast Artillery Corps, with a view to improving the arc mechanism and other details of searchlights, and on June 6, 1907, a further allotment of $2,000 was made to cover the cost of completing the work. It is hoped the material will be ready for test during the fall of this year.

Sunshades for azimuth instruments.—At its meeting April 6, 1905, the Board made an allotment of $150 for the construction of two or more experimental sunshades for azimuth instruments to test their utility. The tests are in progress, but final report has not been received.

Tests to determine drift of mortar projectiles.—April 6, 1905, an allotment of $750 was made, on the recommendation of the Chief of Artillery, for the purchase of the necessary ammunition for a test to be conducted at Fort Terry, N. Y., to determine the drift and probable error of mortar projectiles. As the program adopted could not be carried out with the mortars mounted at Fort Terry, the Chief of Ordnance directed that a modified mortar carriage at the Sandy Hook Proving Ground be sent to Fort Terry for conducting the test, which has been delayed by the necessity for triangulating a base line and the fact that during the months of April, May, June, July, and August there were but four clear days.

Transmission of visible signals.—December 7, 1905, on recommendation of the Chief Signal Officer, the Board allotted $2,400 for experimental work connected with the transmission of visible signals by electricity or otherwise. A portion of this allotment was expended in the purchase and test of a device designed by Capt. T. E. Merrill, Artillery Corps, but the instrument was not favorably considered. Part of the allotment has been used in the purchase of a range indicator for fire direction, now at Fort Monroe undergoing test, and the balance is to be employed in testing new forms of acetylene lanterns and electric hand lamps.

Insulating compounds.—January 4, 1906, the Board made an allotment of $1,300 to enable the Chief Signal Officer to make experiments with insulating compounds for subterranean and submarine cables, with the view of determining whether or not the percentage of Para rubber heretofore required can be reduced. The tests are in progress, but final report has not been received.

Vega telephot camera.—An allotment of $600 was made on June 6, 1907, for the purchase of a Vega telephot camera, manufactured by a Swiss optical firm. It will be tested by the Chief Signal Officer when received.

Semple smoke compound.—January 4, 1906, an allotment of $60 was made for procuring 50 rounds, complete, of 1-pounder ammunition charged with a smoke-producing compound proposed by Mr. J. B. Semple, as it was desired to make a further test at Fort Monroe. This ammunition was tested in 1906, and the Chief of Artillery then requested that 50 rounds of 75 mm. subcaliber ammunition, with projectiles filled with this compound, be sent to the Artillery Board for test in mortars. November 1, 1906, an allotment of $175 was made to cover the cost of the ammunition. The tests demonstrated that the

use of the smoke compound was of no particular advantage in mortar subcaliber practice.

Stability tests of mine and fire-control stations.—March 1, 1906, on the recommendation of the Chief of Engineers, the Board made an allotment of $2,704.32 to provide six rounds of ammunition for 12-inch rifle and four rounds for 10-inch rifle, to be fired from guns at Fort Warren, Mass., in the vicinity of the type mine commander's station, constructed of expanded metal and cement plaster, to determine its stability and suitability for adoption; and on June 7, 1907, a further allotment of $750 was made for four rounds of ammunition to test the stability of Portland cement interior plastering for fire-control stations. The tests have resulted in prescribing that future construction of such buildings shall follow the method tested.

Le Blanc searchlight controller.—March 7, 1907, an allotment of $500 was made for the equipment of a 60-inch searchlight with an electrical controller, designed by Mr. A. Le Blanc, which will be tested when installed.

Experimental redoubt.—During the course of the army maneuvers at Fort Riley last year there was erected by the Engineer troops a typical field earthwork or redoubt, and the practicability of using this construction was proposed to test the adopted system of fire control for field artillery and the destructive effect of the shrapnel and explosive shell employed by that arm of the service. Accordingly, the Board, on June 6, 1907, made an allotment of $5,000 for the purchase of the requisite ammunition to conduct a test, which has been completed, but report has not been received.

ESTIMATES FOR THE COMING YEAR.

The Board has this year submitted to the Secretary of War, for transmission to Congress, an estimate for $100,000 to carry on its work for the fiscal year ending June 30, 1909. It is recommended that the appropriation be made in a single amount as heretofore.

The amount appropriated for the present fiscal year was $25,000, and the estimate submitted is consequently an increase of $75,000.

For many years Congress annually appropriated $100,000 for the work of the Board, and this sum was only reduced in 1905 on the statement of the Board that its available balance was such, in view of the experimental work then in contemplation, that a less amount was required. The balance has now been reduced to such an extent as to require an increased appropriation.

It is practically impossible to say in advance just what experimental work is to be carried on, as new conditions are constantly arising and the Board should not be restricted by lack of funds in making necessary experiments, experiments which may result in the saving of many times their cost from the regular appropriations. Since the 1st of January, 1906, for example, the Board has expended over $56,000 on a series of armor-plate experiments, almost every round fired showing the desirability of other tests, and the program was constantly varied to meet the new conditions developed. The information gained has, at the same time, been of the greatest practical value.

It is believed that the sum for which estimate is submitted is required in order that the Board may properly and advantageously carry on the work intrusted to it by Congress.

FINANCIAL STATEMENT.

In compliance with the act of February 24, 1891, which requires "a detailed statement of all contracts, allotments, and expenditures made by the Board," an exhibit, marked Appendix A, accompanies this report, giving a detailed statement of allotments and expenditures from July 1, 1906, to June 30, 1907, the period covered by this report. No contracts have been made by the Board during the fiscal year.

On July 1, 1906, the Board had on hand $104,695.27, and by act of March 2, 1907, $25,000 was appropriated. To be added to this is the sum of $965.87, revoked from prior allotments, making the total available for the year $130,661.14.

During the year covered by this report the Board made allotments amounting to $37,597.84, leaving a balance, June 30, 1907, of $93,063.30 for continuing the work of the Board, of which amount $14,110 is available for special purposes only, as shown by Appendix A, leaving $78,953.30 only available for general experimental purposes.

J. FRANKLIN BELL,
Maj. Gen., Chief of Staff, President of the Board.
WILLIAM CROZIER,
Brig. Gen., Chief of Ordnance.
A. MACKENZIE,
Brig. Gen., Chief of Engineers.
ARTHUR MURRAY,
Brig. Gen., Chief of Artillery.
GEO. F. E. HARRISON,
Lieut. Col., Coast Artillery Corps.
E. M. WEAVER,
Lieut. Col., Coast Artillery Corps.
THOS. J. HENDERSON,
Civilian Member of the Board.
LAWSON M. FULLER,
Major, Ordnance Department, Recorder of the Board.

The SECRETARY OF WAR.

APPENDIX A.

TABLE SHOWING ALLOTMENTS AND EXPENDITURES MADE BY THE BOARD OF ORDNANCE AND FORTIFICATION FROM JULY 1, 1906, TO JUNE 30, 1907, INCLUDING STATEMENT OF UNEXPENDED BALANCES.

Act of March 2, 1889.

Balance on hand July 1, 1906 [a]		$10,000.00

Act of August 18, 1890.

Balance on hand July 1, 1906 [b]	$4,710.00	
1907.		
June 6. Allotment for purchase of one Vega telephot camera	600.00	
Balance on hand June 30, 1907		4,110.00

Acts of 1892 to 1906, inclusive.

Balance on hand July 1, 1906	$89,985.27	
Act of March 2, 1907	25,000.00	
		114,985.27
Revocations of allotments under these acts:		
1906.		
Dec. 1. May 28, 1903, for Isham recoil spade	50.00	
December 4, 1902, and February 5, 1903, for magazine indicator for automatic pistols	20.65	
December 1, 1904, for telephone in office of recorder	20.00	
1907.		
June 1. October 19, 1897, for powder for test of 5-inch rapid-fire gun	.30	
August 11, 1904, for completing and attaching Fergusson's elevating device	153.14	
August 25, 1904, for ammunition and erection and test of Bethlehem 5-inch gun on combination carriage	65.74	
September 23, 1904, for cartridge cases and powder for test of American & British Manufacturing Company's 6-pounder semi-automatic gun	81.67	
December 7, 1905, completion and installation of Morris tube outfits	38.70	
January 4, 1906, new breechblock for Crozier 6-inch wire-wound gun	368.88	
March 10, 1906, rebanding projectiles for Brown 6-inch wire gun	1.50	
June 7, 1906, ammunition for stability test of fire-control station	2.66	
June 13, 1906, attachment for Benét-Hotchkiss 6-pounder semiautomatic gun	25.00	
18. April 6, 1905, for test of sunshades for azimuth instruments	56.47	
Oct. 4, 1906, construction of building for test of Warner & Swasey 25-foot base range finder	81.16	
		965.87
		115,951.14

[a] Available for movable submarine torpedoes only.
[b] Available for purchases abroad only.

Allotments during the year:

1906.			
July	14. Alteration of device for training artillery gunners	$10.00	
	18. Stationery and miscellaneous supplies January 1 to June 30, 1906	18.76	
	20. Purchase of material for and conducting test of 7½-pounder semiautomatic gun	1,875.00	
Sept.	10. Completion of work of raising and repairing floating target	4,372.78	
Oct.	4. Portable searchlight outfit for field artillery	6,500.00	
	Temporary building for test of Warner & Swasey 25-foot base range finder	800.00	
	Repair and test of De Knight automatic gun	250.00	
Nov.	1. Test of Semple smoke compound in mortar subcaliber practice	175.00	
	Ammunition and test of McClean musket-caliber automatic gun	200.00	
Dec.	6. Expenses of experiments and tests by Lieutenant Gottlieb in improving searchlights	4,000.00	
	Construction of brackets and attaching Rowan reflecting sight	145.00	
1907.			
Jan.	3. To procure and attach one .22-caliber rifle to device for training gunners and to furnish 2,000 rounds of ammunition	25.00	
Mar.	7. To equip one 60-inch searchlight with Le Blanc control device	500.00	
	Two subtarget gun machines for test at Presidio of Monterey	500.00	
Apr.	4. Repair of De Knight machine gun and continuation of test	200.00	
May	2. To continue tests of armor plate	2,500.00	
	To procure one Nikoloff telemeter	25.00	
June	6. Ammunition for test of experimental redoubt at Fort Riley	5,000.00	
	For completing work of improving searchlight	2,000.00	
	30. Expenses of Board for year	7,901.30	
			$36,997.84
	Balance available July 1, 1907		78,953.30

RECAPITULATION.

Balance on hand, act of March 2, 1889	$10,000.00	
Balance on hand, act of August 18, 1890	4,710.00	
Balance on hand and appropriated during the year, general fund	114,985.27	
Allotments revoked	965.87	
Total available		$130,661.14
Allotments during the year		37,597.84
Available for allotment		93,063.30

APPENDIX B.

Summary of subjects considered.

Subject.	Submitted by—
Device for training artillery gunners	Chief of Ordnance.
Test of 7½-pounder semiautomatic gun	Do.
Raising and repairing floating target	Do.
Portable searchlight for field artillery	Chief of Artillery.
Building for test of range finder	Chief of Engineers.
Test of De Knight automatic gun	Chief of Ordnance.
Report of test of depression range finders	Chief of Artillery.
Telescopic elevator	Janko Kovacevic.
Sketching camera	Lieuts. C. M. Bunker and E. P. Nones, A. C.
Telescopic sight	John P. O'Connor.
Range finder	Harry Percy.
Semaphore	Lieut. F. B. Edwards, A. C.
Armored car	Joseph M. Barber.
Breech mechanism	Edwin C. Pross.
Armored car	Sam Carter.
Projectiles	William Gaillac.
Fuze	John B. Collette.
Report of test of Warner & Swasey Co. 8-foot base range finder.	Artillery Board.
Night shooting light	America Co.
Repairs of 10-inch wire gun	Brown Wire Gun Co.
High-explosive shells	George Blackman.
Flying machine	Alva L. Reynolds.
Projectile	William Gaillac.
"Cingoli" belt rail	Maj. C. Bonagente.
Fire direction	George McCart.
Adoption of Brown system of gun construction	Brown Wire Gun Co.
Further test of Whistler-Hearn range finder	Keuffel & Esser Co.
Smoke compound	J. B. Semple.
Test of automatic guns	S. N. McClean.
Further test of subtarget gun machines	Committee of Board.
Device to prevent erosion of guns	United States Ordnance and Projectile Co.
Payment of freight for return of range finder	Bethlehem Steel Co.
Flags for airships	D. R. Proctor.
Hinged bayonet	W. P. Turner.
Gas check for projectiles	James H. White.
Gun shield	H. H. Werwig.
Distance indicator	M. B. Camp.
Protective apron for ships	Do.
Engineering construction	Raymond E. Ackley.
Telescopic sight	A. C. Hopkins.
Sighting field artillery at night	George McCart.
Development of searchlights	Lieut. E. Gottlieb, A. C.
Rowan reflecting sight	Chief of Ordnance.
Recoil spade for field guns	W. S. Isham.
Test of Schulz disappearing platform for searchlights	Chief of Engineers.
Range finder, new	Capt. I. N. Lewis, A. C.
Device to determine "overs and shorts"	Keuffel & Esser Co.
Gun rack or hanger	John T. Nicholson.
Gun construction	F. M. Mitchell.
Intrenching spade	William Neve.
Machine gun	S. M. Pledger.
Spade to be attached to rifle	Oliver Barnish.
Roller tire for wheels	Newton J. Myers.
Vent-closing device	Do.
Explosive shell	C. D. Gilbert.
Revolver hammer	Charles Messick, jr.
Nut lock	George H. Spence.
Lubricating projectiles	D. F. Tailliez.
Projectile	Albert Wakefield.
Dredging machine	Charles W. Pratt.
Morris tube outfits, further test	Artillery Board.
Test of armor, change in program	Committee of Board.
Gun construction	F. M. Mitchell.
High explosive	L. T. Briggs.
Bullet-proof material	Joseph Strauss.
Ammunition hoist	Edwin C. Pross.
Ammunition belt or jacket	J. W. Righton.

Summary of subjects considered—Continued.

Subject.	Submitted for—
Test of lubricating projectiles	D. F. Tailliez.
Report of test of Fergusson device for laying guns	Artillery Board.
Report of test of Schulz disappearing platform for searchlights.	Committee of Board.
Continuation of armor-plate tests	Do.
Test of experimental redoubt	Military Secretary.
Test of armor plate	Ordnance Board.
Aerial projectiles	American Projectile Manufacturing Co.
Dirigible torpedo	Capt. I. N. Lewis, A. C.
Revolver hammer	Charles Messick, jr.
Report on Fergusson device for laying guns	Ordnance Board.
Dirigible balloon	Hippolyte François.
Searchlight controller	A. Le Blanc.
Harbor defense	A. Ashton.
Breechblock	Israel F. Good.
Electric cannon	J. H. Benscoter.
Armored car	I. W. Odell.
Winged projectile	A. R. Coleman.
Armored automobile	Justin Bouscal.
Multiple-barrel gun	W. T. Stephens.
Means for firing submarine mines	William E. Wilkinson.
Armored automobile	Thomas Beckman.
Projectile	Joseph Hajek.
Revolving cannon	J. M. Bunting.
Magnetic torpedoes and projectiles	Mrs. C. M. Ropes.
Adoption of Brown system of gun construction	Brown Wire Gun Co.
Searchlight controller	A. Le Blanc.
Subtarget gun machines for School of Musketry	President of Board.
Spade shield	Capt. Clarence Weiner.
Motor battery	Charles F. Shedd.
Explosive projectile	Dr. J. A. Malone.
Shrapnel bullets	Oswald Helsing.
Floating battery	Charles W. Pratt.
Armor-piercing projectile	William R. Amens.
Portable shield	John T. Groat.
Projectile	S. Barfiel.
Binocular distance indicator	Baron W. von Borcke.
Machine gun	Charles F. Kofshe.
Harbor defense	W. H. Wickham.
Report of test of floating target	Ordnance Board.
Bomb-dropping device	George F. Cole.
Fourteen-inch wire-wound guns	Chief of Ordnance.
Test of Brown and Crozier 6-inch wire-wound guns	Gen. J. P. Story.
Test of De Knight automatic gun	Chief of Ordnance.
Erosive effect of powder	Do.
Submarine mines	W. C. Gilham.
Explosive projectile	William M. Douglas.
Fuze for projectiles	Thomas Olson.
Obturating device for projectiles	Dr. F. G. Asbill.
Telescopic sight	R. Scheliga.
Spring-operated cannon	Joe Sifferle.
Development of coast defenses	A. L. Mielich.
Hydropneumatic brake	Henri Heubert.
Training and elevating mechanism for guns	Richard Raines.
Shield or breastplate	M. Ludlow.
Report of test of armor plate	Ordnance Board.
Competitive test of range finders	Board of Ordnance and Fortification.
Telemeter	Captain Nikoloff.
Dirigible torpedo	Maj. I. N. Lewis.
Magnetic torpedoes and projectiles	Mrs. C. W. Ropes.
Two-and-one-half-pounder field gun	William M. Douglas.
Examination of Langley aerodrome	Charles D. Walcott.
Registering target	Albert Fackler.
Projectile to contain pepper, etc	G. Schiavone.
Motor land torpedoes	C. B. Phillips.
Hydropneumatic brake	Henri Heubert.
Harbor defense	A. Ashton.
Vega telephot camera	Secretary of State.
Ammunition for test of redoubt	Chief of Artillery.
Improvements in searchlights	Lieut. E. Gottlieb.
Revocation of unexpended balances	Chief of Ordnance.
Six-pounder semiautomatic gun	United States Ordnance Co.
Do	Driggs-Seabury Ordnance Corporation.
Do	U. S. Rapid Fire Gun and Power Co.
Protest relative to wire-wound guns	Brown Wire Gun Co.
Telescopic sight	A. C. Hopkins.
Noiseless cannon, projectile diverter, etc	Dr. Joseph R. Witzel.
Wire cutter	Joseph Helmer.
Armor-piercing projectiles	August Orshansky.
Peep sights for small arms	H. G. Patton.
Gun sight	James Ryan.
Offer of services and inventions	J. H. Malaterre.

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